

NASA CR-151938

(NASA-CR-151938) WIND TUNNEL TEST ON A
1/4.622 FROUDE SCALE, HINGELESS ROTOR, TILT
ROTOR MODEL, VOLUME 3 (Boeing Vertol Co.,
Philadelphia, Pa.) 709 P NO 499/EE A11

N77-17053

Unclass

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WIND TUNNEL TEST ON A 1/4.622 FROUDE SCALE, HINGELESS ROTOR, TILT ROTOR MODEL

VOLUME III

J. P. Magee

H. R. Alexander

September 1976

Prepared under Contract NAS2-9015

for

National Aeronautics and Space Administration

Ames Research Center

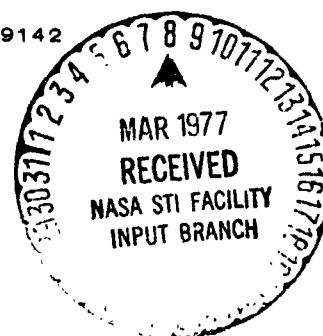
by

BOEING VERTOL COMPANY

A DIVISION OF THE BOEING COMPANY

P O BOX 16858

PHILADELPHIA, PENNSYLVANIA 19142



D238-10000-3

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BOEING VERTOL COMPANY

A DIVISION OF THE BOEING COMPANY

P.O. BOX 16858
PHILADELPHIA, PENNSYLVANIA 19142

CODE IDENT. NO. 77272

NUMBER D238-1000-3

TITLE WIND TUNNEL TESTS ON A 1/4.622
FROUDE SCALE, HINGELESS ROTOR,
TILT ROTOR MODEL

ORIGINAL RELEASE DATE _____. FOR THE RELEASE DATE OF
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| PREPARED BY | <u>John P. Magee</u> J. P. Magee | DATE | <u>9/14/76</u> |
| PREPARED BY | <u>H. R. Alexander</u> H. R. Alexander | DATE | <u>9/14/76</u> |
| APPROVED BY | <u>W. C. Boehm</u> W. C. Boehm | DATE | <u>9/14/76</u> |
| APPROVED BY | _____ | DATE | _____ |

LIMITATIONS

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| ACTIVE SHEET RECORD | | | | | | | | | | | |
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| ACTIVE SHEET RECORD | | | | | | | | | | | |
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ACTIVE SHEET RECORD

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ACTIVE SHEET RECORD

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ACTIVE SHEET RECORD

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APPROVAL

ABSTRACT

This document is Volume III of four volumes of experimental data obtained on a wind tunnel test of a 1/4.62 Froude scale hingeless rotor tilt rotor model. The test generated parametric data from hover, through transition and out to 300 knots full scale speed in cruise, and was performed under NASA Contract NAS2-9015.

This volume contains transition data files.

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FOREWORD

This report was prepared by the Boeing Vertol Company of Philadelphia, Pennsylvania for the National Aeronautics and Space Administration, Ames Research Center under NASA Contract NAS2-9015.

Mr. M. A. Shovlin and Mr. T. Galloway of Ames Research Center were technical monitors for this work.

The Boeing Program Manager was Mr. J. P. Magee. The contributions of the Boeing Vertol Wind Tunnel staff are acknowledged.

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LIST OF SYMBOLS

| <u>SYMBOL</u> | <u>NOMENCLATURE</u> | <u>UNITS</u> |
|---------------|--------------------------------------|--|
| A_1 | Lateral cyclic pitch | Deg |
| B_1 | Longitudinal cyclic pitch | Deg |
| b | Span | Ft |
| CTB-L | Left Rotor Thrust Coefficient | $\frac{T_L}{\rho \pi R^2 V_T^2}$ |
| CPB-L | Left Rotor Power Coefficient | $\frac{HP_L \times 550}{\rho \pi R^2 V_T^3}$ |
| CNFB-L | Left Rotor Normal Force Coefficient | $\frac{NF_L}{\rho \pi R^2 V_T^2}$ |
| CSFB-L | Left Rotor Side Force Coefficient | $\frac{SF_L}{\rho \pi R^2 V_T^2}$ |
| CPMB-L | Left Rotor Pitching Moment | $\frac{PM_L}{\rho \pi R^3 V_T^2}$ |
| CYMB-L | Left Rotor Yawing Moment | $\frac{YM_L}{\rho \pi R^3 V_T^2}$ |
| CTB-R | Right Rotor Thrust Coefficient | $\frac{T_R}{\rho \pi R^2 V_T^2}$ |
| CPB-R | Right Rotor Power Coefficient | $\frac{HP_R \times 550}{\rho \pi R^2 V_T^3}$ |
| CNFB-R | Right Rotor Normal Force Coefficient | $\frac{NF_R}{\rho \pi R^2 V_T^2}$ |
| CSFB-R | Right Rotor Side Force Coefficient | $\frac{SF_R}{\rho \pi R^2 V_T^2}$ |
| CPMB-R | Right Rotor Pitching Moment | $\frac{PM_R}{\rho \pi R^3 V_T^2}$ |

LIST OF SYMBOLS (continued)

| <u>SYMBOL</u> | <u>NOMENCLATURE</u> | <u>UNITS</u> |
|--------------------------|---|--|
| CYMB-R | Right Rotor Yawing Moment | $\frac{Y_{M_R}}{\rho \pi R^3 V_T^2}$ |
| CLW-AC | Aircraft Lift Coefficient | $\frac{\text{Lift}}{1/2 \rho V^2 S}$ |
| CSFW-AC | Aircraft Side Force Coefficient | $\frac{SF}{1/2 \rho V^2 S}$ |
| CAFN-AC | Aircraft Axial Force Coefficient | $\frac{\text{Axial Force}}{1/2 \rho V^2 S}$ |
| CPMW-AC | Aircraft Pitching Moment | $\frac{\text{Pitch Moment}}{1/2 \rho V^2 S \bar{c}}$ |
| CYMW-AC | Aircraft Yawing Moment | $\frac{\text{Yaw Moment}}{1/2 \rho V^2 S b}$ |
| CRMW-AC | Aircraft Rolling Moment | $\frac{\text{Roll Moment}}{1/2 \rho V^2 S b}$ |
| \bar{c} | Wing Chord | FT |
| D | Diameter | - |
| D' | Airframe Drag | LB |
| EI_{FLAP} | Flapwise Bending Stiffness | - |
| EI_{CHORD} | Chordwise Bending Stiffness | - |
| FM | Figure of Merit | - |
| GJ | Torsional Stiffness | - |
| GW | Gross Weight | LB |
| HP | Rotor Horsepower | HP |
| I_{xx}, I_{yy}, I_{zz} | Mass Moment of Inertia about the Three Axes | IN-LB SEC ² |
| I_N | Nacelle Incidence | Deg |
| I_p | Acceleration Pitch Inertia | - |
| H_z | Hertz | - |

LIST OF SYMBOLS (continued)

| <u>SYMBOLS</u> | <u>NOMENCLATURE</u> | <u>UNITS</u> |
|----------------|--|--------------------|
| I_p^* | Centrifugal Pitch Inertia | - |
| I_{PIVOT} | Moment of Inertia - Polar | LB-FT |
| i_w | Wing Incidence | Deg |
| L | Lift | LB |
| NA | Neutral Axis | - |
| p | Per Rotor Revolution | - |
| PM | Pitching Moment | FT LB |
| q | Freestream Dynamic Pressure $1/2\rho V^2$ | LB/FT ² |
| R | Rotor Radius | FT |
| r | Radial Location to a Blade Station | FT |
| RM | Rolling Moment | FT LB |
| S | Wing Area | FT ² |
| SF | Side Force | LB |
| T | Rotor Thrust | LB |
| t | Airfoil Thickness | FT |
| V | Freestream Velocity | FT/SEC |
| V_T | Rotor Tip Speed | FT/SEC |
| X | Aircraft Propulsive Force | LB |
| X/R or r/R | Non-Dimensional Radius | - |
| YM | Yawing Moment | FT LB |
| α | Angle of Attack | - |
| α_f | Fuselage Pitch Deflection | Deg |
| α_s | Nacelle Shaft Pitch Deflection | Deg |

LIST OF SYMBOLS (continued)

| <u>SYMBOLS</u> | <u>NOMENCLATURE</u> | <u>UNITS</u> |
|-------------------------|--|--------------------------------------|
| β | Side Slip Angle | Deg |
| δ_A | Aileron Deflection | Deg |
| δ_F | Flap Deflection | Deg |
| ∂ | Partial Derivative Operator | - |
| Δ | Increment In Coefficient | - |
| $\Delta\theta$ | Incremental Blade Pitch | - |
| ρ | Density of Air | LB SEC ² /FT ⁴ |
| σ | Rotor Solidity $\frac{bCR}{\pi R^2}$ | - |
| ψ | Rotor Azimuth Angle | Deg |
| θ_{75} | Rotor Blade Collective Pitch at the Three Quarter Radius | Deg |
| μ | Advance Ratio V/V_T | - |
| ω_α | Wing Torsional Frequency | cps |
| ω_β | 2nd Mode Bending Blade Frequency | - |
| ω_C | Wing Chordwise Bending Frequency | cps |
| ω_L | 1st Mode Bending Blade Frequency | - |
| ω_p | Aircraft Pitch Frequency | cps |
| ω_v | Wing Vertical Bending Frequency | cps |
| Ω | Rotor Angular Velocity | - |
| $1\Omega, 2\Omega$ | Integer Frequency Ratio | - |
| $\Omega - \omega_l$ | Lower Blade Lag Rotational Frequency | cps |
| $\Omega + \omega_\beta$ | Upper Blade Flap Rotational Frequency | cps |
| $\Omega - \omega_\beta$ | Lower Blade Flap Rotational Frequency | cps |

LIST OF SYMBOLS (continued)

| <u>SYMBOLS</u> | <u>NOMENCLATURE</u> | <u>UNITS</u> |
|----------------|---|--------------|
| ζ_v | Wing Vertical Bending Damping % Critical | - |
| ζ_c | Wing Chord Bending Damping % Critical | - |
| ζ_α | Wing Torsion Damping % Critical | - |

1.0 INTRODUCTION

This document contains wind tunnel test data obtained on a 1/4.622 scale dynamically similar model of a tilt rotor aircraft which has composite hingeless blades. The test was performed under NASA contract NAS2-9015.

The objective of the test was to generate information on the behavior of rotor and airframe effects over a range of flight parameters representing the complete operating envelope of the tilt rotor vehicle. The information which was required included the magnitude and sensitivity of:

- (1) Rotor forces and moments
- (2) Blade loads and pitch link loads
- (3) Wing rotor interference effects
- (4) Airframe forces and moment

for values of such flight parameters as:

- (1) Nacelle tilt angle
- (2) Forward speed
- (3) Aircraft attitude in pitch and yaw
- (4) Collective and cyclic pitch control
- (5) Wing flap deflection

The selection of test points and true variations for parameters was made in such a way that a comprehensive set of data was obtained for all potential flight conditions through hover, a wide envelope of transitions, and cruise at speeds up to 300 knots.

The purpose of this acquisition of comprehensive rotor and airframe test data is to provide the knowledge and basis for understanding rotor and airframe behavior which is an essential prerequisite to the development of an efficient system of integrated rotor and aircraft controls.

A secondary objective of the test was to determine the feasibility of a control system which minimizes blade loads in cruise. The characteristic feature of this system is the use of cyclic pitch geared by a simple mechanical linkage to the motion of the stick and control surfaces. These must be properly phased and scheduled to achieve good flying qualities in all flight regimes, subject to the overall design requirement of an optimal control system to maintain simplicity and reliability as far as is consistent with the loads, maneuver envelope and flying qualities of the aircraft.

The rotor controls provide a major portion of the control capability from hover through the low transition speed range, although the conventional control surfaces are operative in all regimes of flight including hover. As speed is increased, and the aerodynamic surfaces become effective for trim and control, the rotor controls can be directed at minimizing rotor loads. In cruise the problem reduces to determining the rotor control required to maintain minimum loads. Prior to this test, a limited amount of full scale experimental data existed for transition, and for cruise up to speeds of 192

knots. This test program extends the range of this data in the transition regime, and in cruise flight the range was extended up to the simulated speed of 300 knots.

The data obtained on this test goes a long way toward providing the information which is necessary to tackle the job of designing an optimized and integrated control system for a tilt rotor aircraft using a soft inplane hingeless rotor. Work which remains to be done involves reducing the data obtained in the test, to an analytical format with forces, moments, loads, etc., expressed as functions of the relevant flight parameters. This is necessary for two reasons:

- (1) to provide an understanding of the significance and relative importance of the parameters which will permit efficient planning of future full scale tests
- (2) to provide a set of simple functions representing the body of test data, from which the rotor effects may be calculated within the context of a real time simulation

This reduction of the test data to analytical functions of the parameters is beyond the scope of the current contract. It is planned that this additional step will be accomplished in the near future under separate funding.

The data obtained during this test is presented in four volumes.

Volume I contains a detailed description of the model, the test installation, test procedures and data reduction: for the convenience of the user, an abbreviated discussion of these is included in Volumes II, III and IV. It was felt that the amount of data generated was too voluminous to be readily presented in a single volume, and Volumes II, III and IV present all the data in a logical sequence.

2.0 DESCRIPTION OF MODEL AND DATA FILE SYSTEM

This section of the report contains an abbreviated description of the model and also an explanation of the order in which the data are presented and identifies the values of test variables held constant in any given test run.

2.1 Model Description

The model tested is a 1/4.622 scale full span, powered configuration that is Froude scaled from the Model 222 Tilt Rotor Research aircraft. This model, shown in Figure 1 was provided by the contractor for this test program and has the following major dynamically-scaled components.

1. Two 3-bladed rotors
2. Two nacelles
3. Full span wing
4. Fuselage
5. Tail

Basic model dimensions are shown in Table 1. The rotors are defined in Figure 2 and have the same aerodynamic and aeroelastic characteristics as the full scale rotor built under NASA contract NAS2-6505. It has remote controlled collective pitch and two axes cyclic pitch actuation systems.

The nacelles are joined to the wing by a pivot and have remote pitch actuation.

TABLE 1
MODEL DIMENSIONS

ROTOR

| | |
|----------------------------|----------------------|
| Number of Blades | 3 |
| Radius | 33.75 IN. (85.72 cm) |
| Chord | 4.078 IN. (10.35 cm) |
| Twist | 42.5 DEG. |
| Airfoil Section | 23021/23010-1.58 |
| Solidity | 0.115 |
| Rotor Speed (Hover) | 1185 RPM |
| Rotor Speed (Cruise) | 825 RPM |
| Collective Pitch Available | -5 to 65 DEG. |
| Cyclic Pitch Available | + 10 DEG. |

NACELLE

| | |
|--|----------------------|
| Nacelle Pivot Position (in % of Wing Chord) | 40% |
| Rotor Disc Nacelle Pivot Distance | 12.33 IN. (31.31 cm) |

WING

| | |
|------------------------------------|--|
| Airfoil Section | 634221 Modified |
| Span (Rotor ξ to Rotor ξ) | 86.76 IN. (220.37 cm) |
| chord | 15.53 IN. (39.44 cm) |
| Area | 9.36 FT. ² (.869 M ²) |
| Aspect Ratio | 5.61 |
| Flap in % of Chord | 30% |
| Wing Incidence | 2 DEG. |
| Thickness - Chord Ratio | 0.21 |

FUSELAGE

| | |
|----------|------------------------|
| Diameter | 14.69 IN. (37.31 cm) |
| Length | 102.50 IN. (260.35 cm) |

TAIL - HORIZONTAL

| | |
|--|--|
| Area | 2.73 FT. ² (.253 M ²) |
| Span | 10.89 IN. (27.66 cm) |
| Aspect Ratio | 4.25 |
| Taper Ratio (C _{TIP} /C _{ROOT}) | .384 |
| Root Chord | 14.05 IN. (35.68 cm) |
| Airfoil Section | 64A010 |
| Elevators in % of Chord | 44.1% |

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TABLE 1 (continued)TAIL - VERTICAL

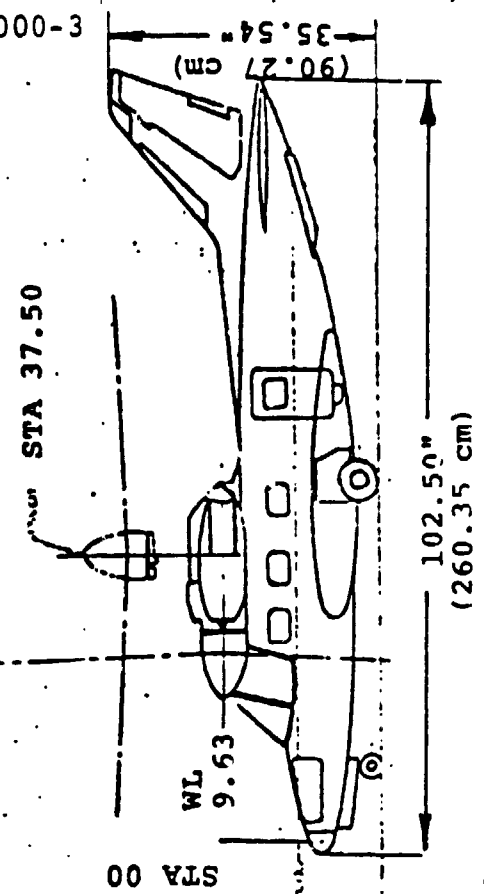
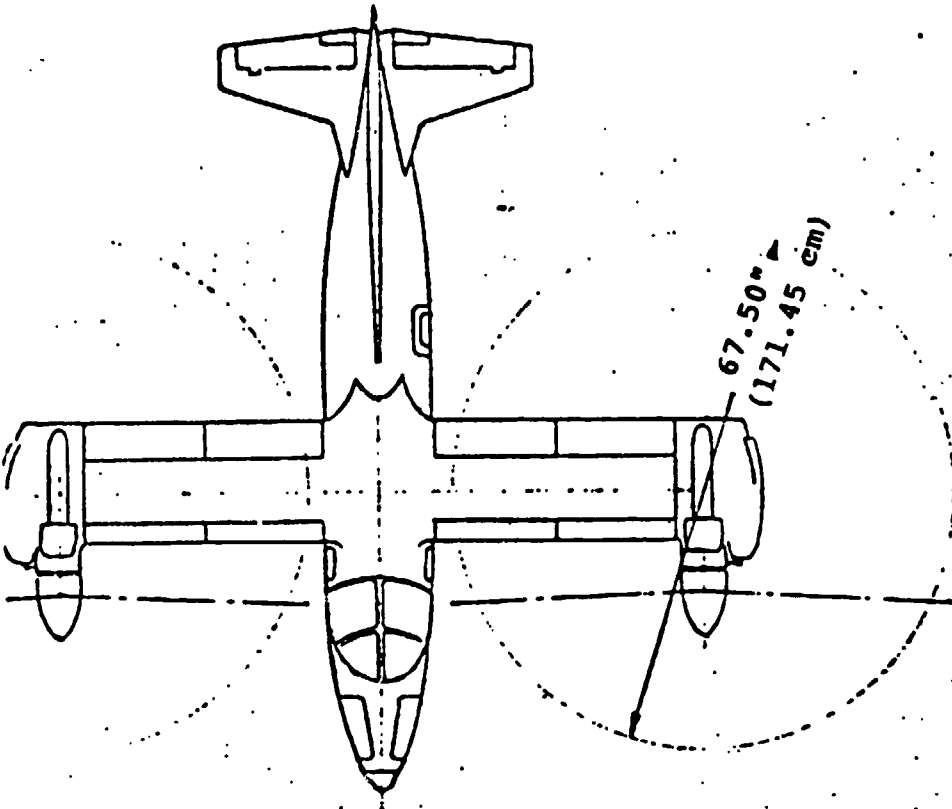
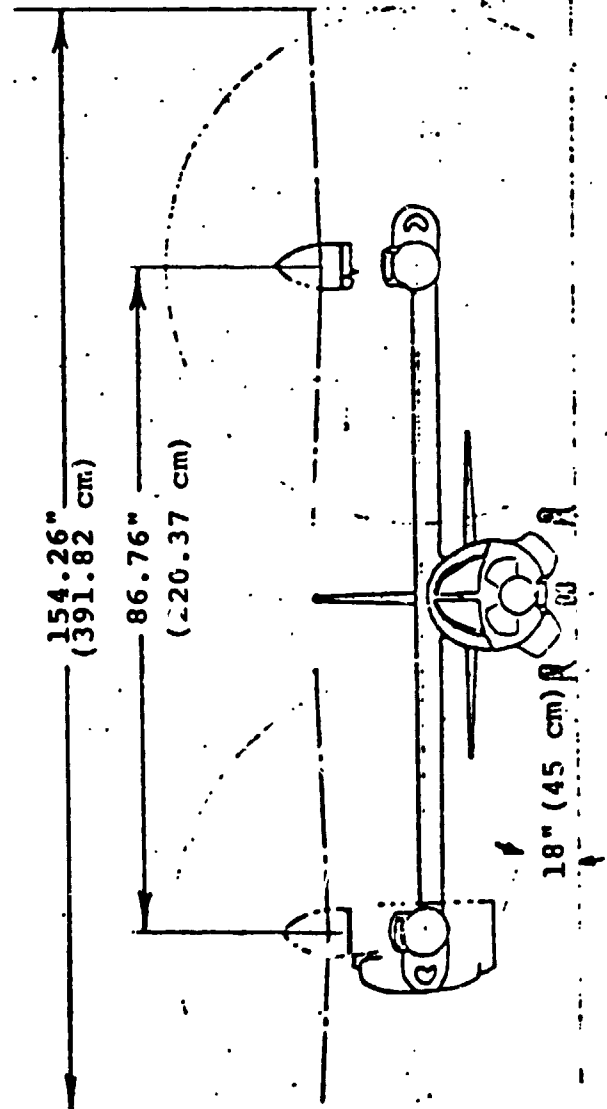
| | | |
|--|----------------------|------------------------|
| Area | 2.03 FT ² | (.185 M ²) |
| Span | 22.75 IN. | (57.78 cm) |
| Aspect Ratio | 1.77 | |
| Taper Ratio (C _{TIP} /C _{ROOT}) | .35 | |
| Root Chord | 20.98 IN. | (53.29 cm) |
| Airfoil Section | 64A008 | |
| Rudder in % of Chord | 50.6 | |

ROTOR

| | | |
|------------|-----------|-------------|
| Diameter | 67.50 In. | (171.45 cm) |
| Solidity | .115 | |
| No. Blades | 3 | |

WEIGHTS

| | |
|-----------------|--------------------|
| Design Gross Wt | 122 Lbs (55.35 Kg) |
|-----------------|--------------------|



D238-10000-3

85.72 ci

ROTOR RADIUS = 3.75
3 BLADES/ROTOR

TWIST REFERS TO
BOEING REFERENCE LINE

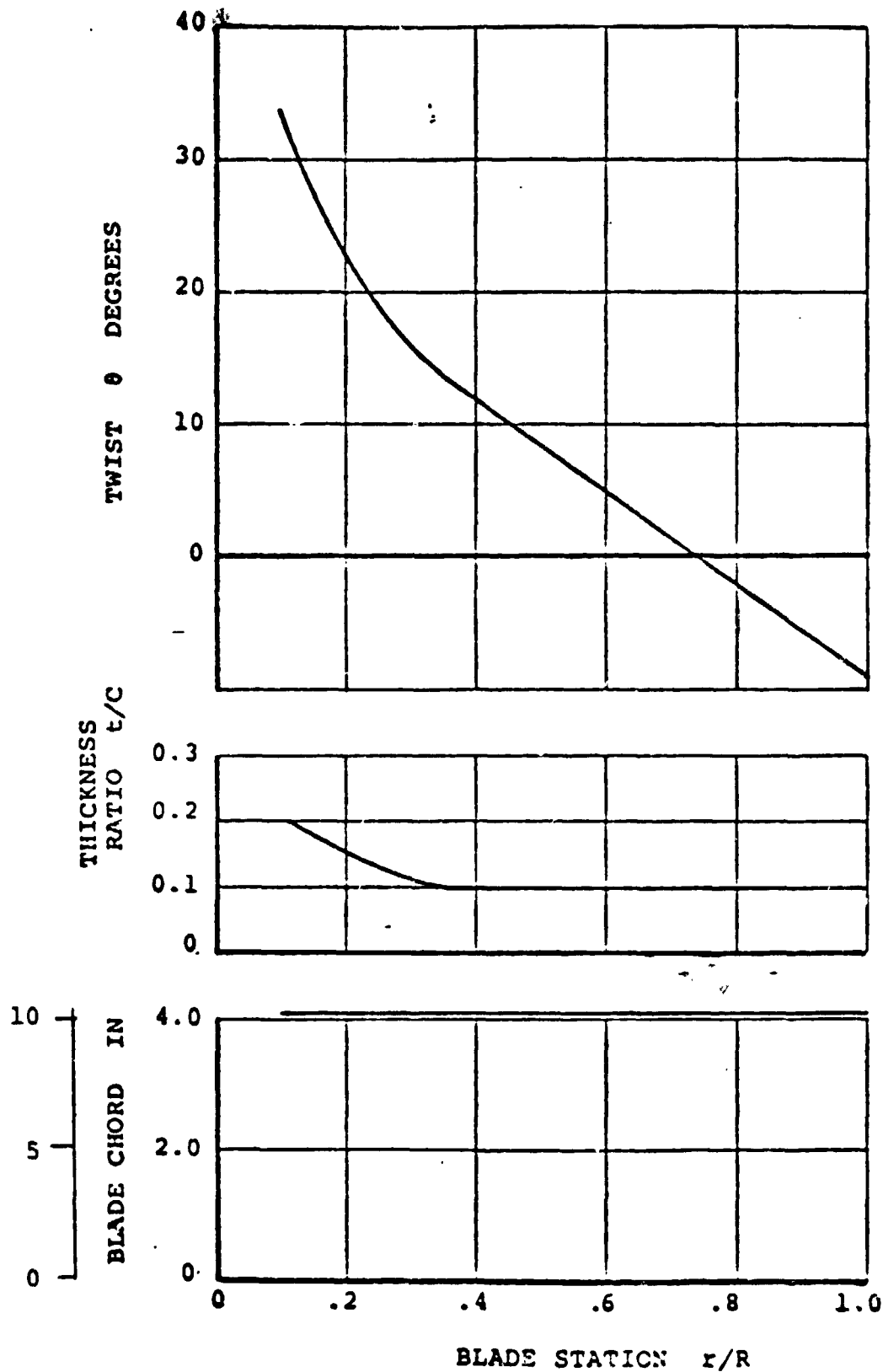


FIGURE 2. 1/4.622 FROUDE SCALE MODEL BLADE DEFINITION

The wing is crown mounted and has full span flaps and leading edge umbrellas for download alleviation. Flaps are used during transition to provide additional lift and the outboard section of the flap is used as an aileron for control in conjunction with outboard spoilers.

The wing, fuselage, and empennage are dynamically scaled from the Model 222 aircraft and the rudder and elevator are remotely controlled. The model was supported on a pedestal mount with pitch and yaw capability.

The primary instrumentation includes strain gages to obtain flap, chord and torsion loads at the blade root. A six component balance in each nacelle measures the rotor forces moments and torque. A six component main balance located in the fuselage measures aircraft forces and moments. Position indicators connected to meters provide a visual display of the aircraft control positions which were remotely controlled. Each rotor has an RPM and 1/rev output. Thermocouple readouts provided safety monitoring of critical motor, gearbox and cross shaft bearing temperatures.

The model is powered by a 20 HP, 11,375 RPM electric motor manufactured by Task Corporation. The motor drives a 3.04:1 reduction gear box in the center fuselage which is connected by cross shafts in the wing to a 3.09:1 reduction gear box in each nacelle. This provides a total gear reduction from the electric motor to rotor of 9.39:1.

Photographs of the model and detailed model data are provided in Volume I Reference .

Figure 3 shows the model mounting on the SRH teststand which provides pitch and yaw motion to the model. The dimensions associated with the balance centers (both main and nacelle balances) in relation to the hub center and aircraft CG reference location are shown in Figure 4.

The rotor cyclic controls are not located in the classical axis system. Figure 5 shows the location of the actuators in the azimuth and the blade location when the pitch arm is over the actuator. This defines the cyclic axis system used on test.

Sign conventions used for defining the measured forces and moments are depicted in Figure 6. The directions shown being positive forces and moments.

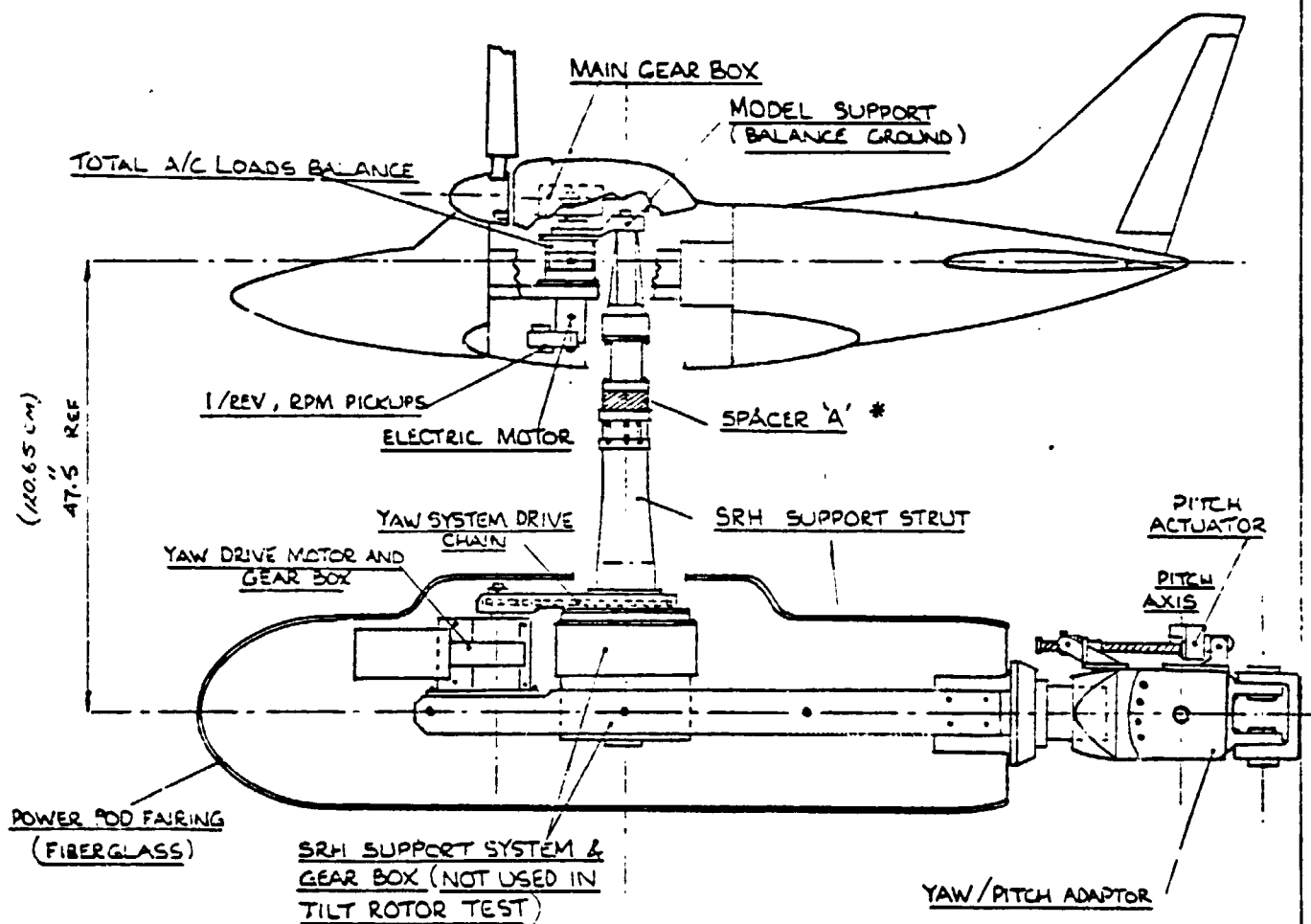
Positive pitch and yaw directions are in the same sense as positive pitch and yaw moments.

In order to provide a ready transformation of model data to full scale, a table of scale factors is given in Table 2.

2.2 Data File Index System

The procedure adopted on test is best explained by referring to Figure 7. This figure depicts the combinations of nacelle incidence I_N and airspeed (shown full scale) selected for

- * FOR RUNS 1-26 SPACER 'A' WAS 20" LONG ('DUMMY' SRH BALANCE).
 FOR RUNS 27-35 SPACER REPLACED BY SRH BALANCE (20" LONG).
 FOR RUNS 36-166 SPACER 'A' FITTED AS DRAWN (2" LONG).



SCALE : 1/20

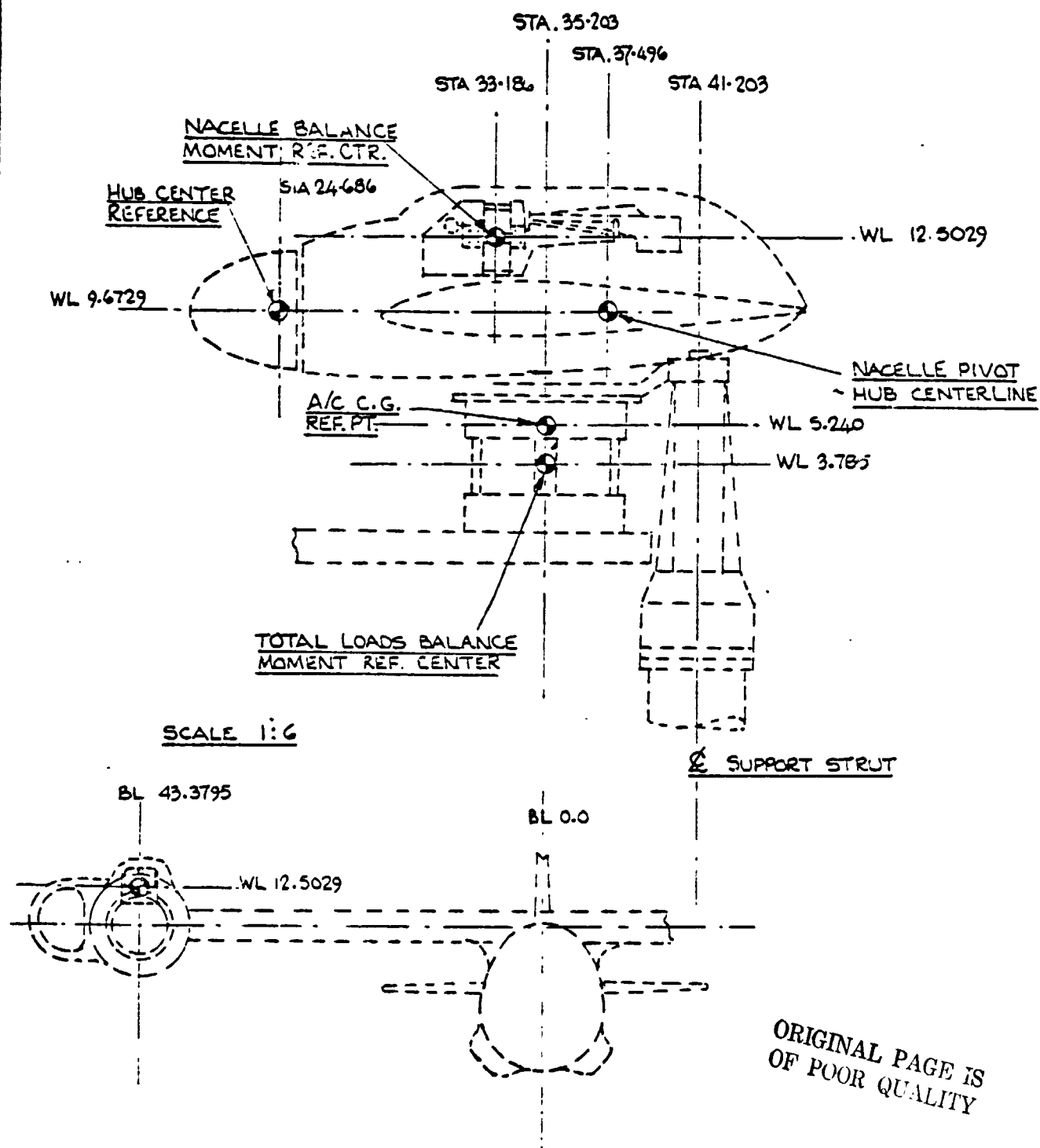
VR 095Q-1 ~ 1/4.622 SCALE TILT ROTOR MODEL

Figure 3. GENERAL ARRANGEMENT AND INSTALLATION ON SRH TEST STAND

Rev.
6-1-76

FORM 46284 (2-55)

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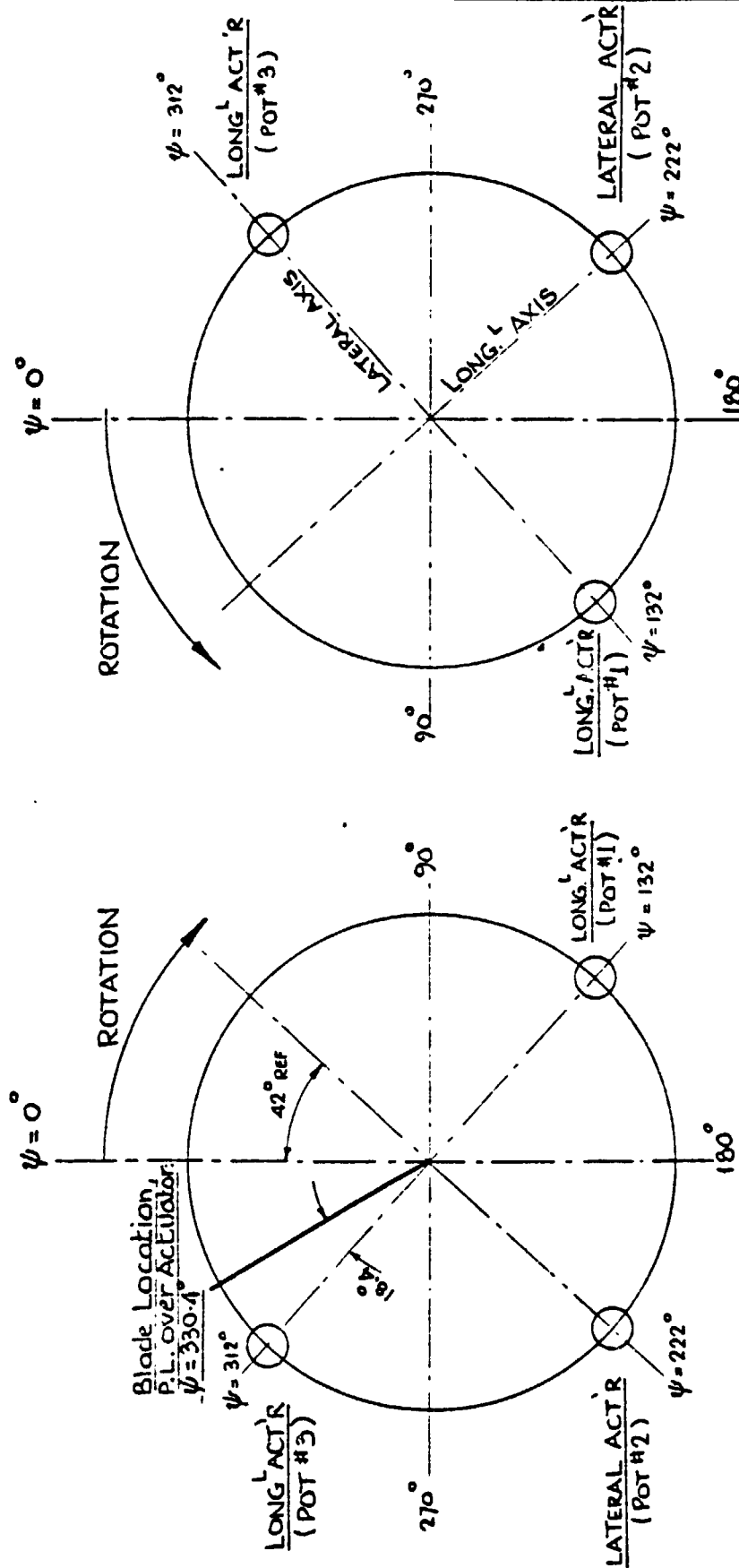


VR 095 Q-1 1/4.622 SCALE TILT ROTOR MODEL

Figure 4. RELATIVE BALANCE LOCATIONS & MODEL REFERENCES

KCF 6/2/76

FORM 46286 (2-56)



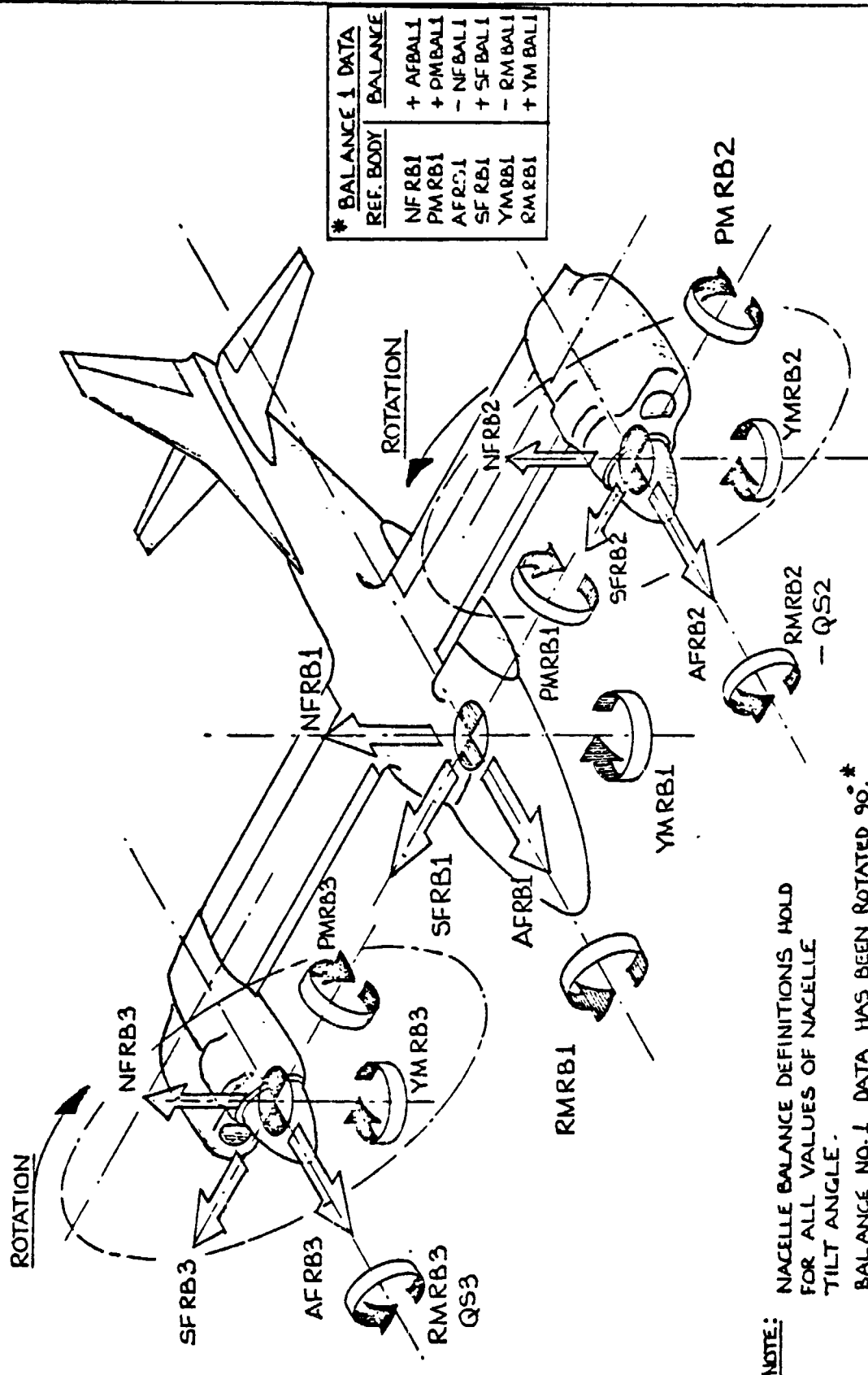
LEFT ROTOR

RIGHT ROTOR

FRONT VIEW ON MODEL, $\psi_N = 0^\circ$

VR 095 Q-1 1/4.622 SCALE TILT ROTOR MODEL

Figure 5. CONTROL SYSTEM ARRANGEMENT



VR 095 Q-1 1/4.622 SCALE TILT ROTOR MODEL
 Figure 6. DEFINITION OF MODEL FORCES & MOMENTS REFERRED TO REF. BODY AXES

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SCALE FACTORS

| | |
|------------------------|---------|
| LINEAR DIMENSIONS | 4.622 |
| MASS OR WEIGHT | 98.739 |
| TIME | 2.15 |
| FREQUENCY | 0.46514 |
| VELOCITY | 2.15 |
| VISCOUS DAMPING | 45.927 |
| STIFFNESS | 2109.36 |
| SPRING RATE | 21.363 |
| MASS MOMENT OF INERTIA | 2109.36 |
| FORCE | 98.739 |
| STRAIN | 1.0 |
| MOMENT OR TORQUE | 456.373 |
| POWER | 212:278 |
| PER REV FREQUENCY | 1.0 |
| DISC LOADING | 4.622 |
| MACH NO. | 2.1498 |
| FROUDE NO. | 1.0 |
| LOCK NO. | 1.0 |

INITIAL TEST CONDITIONS

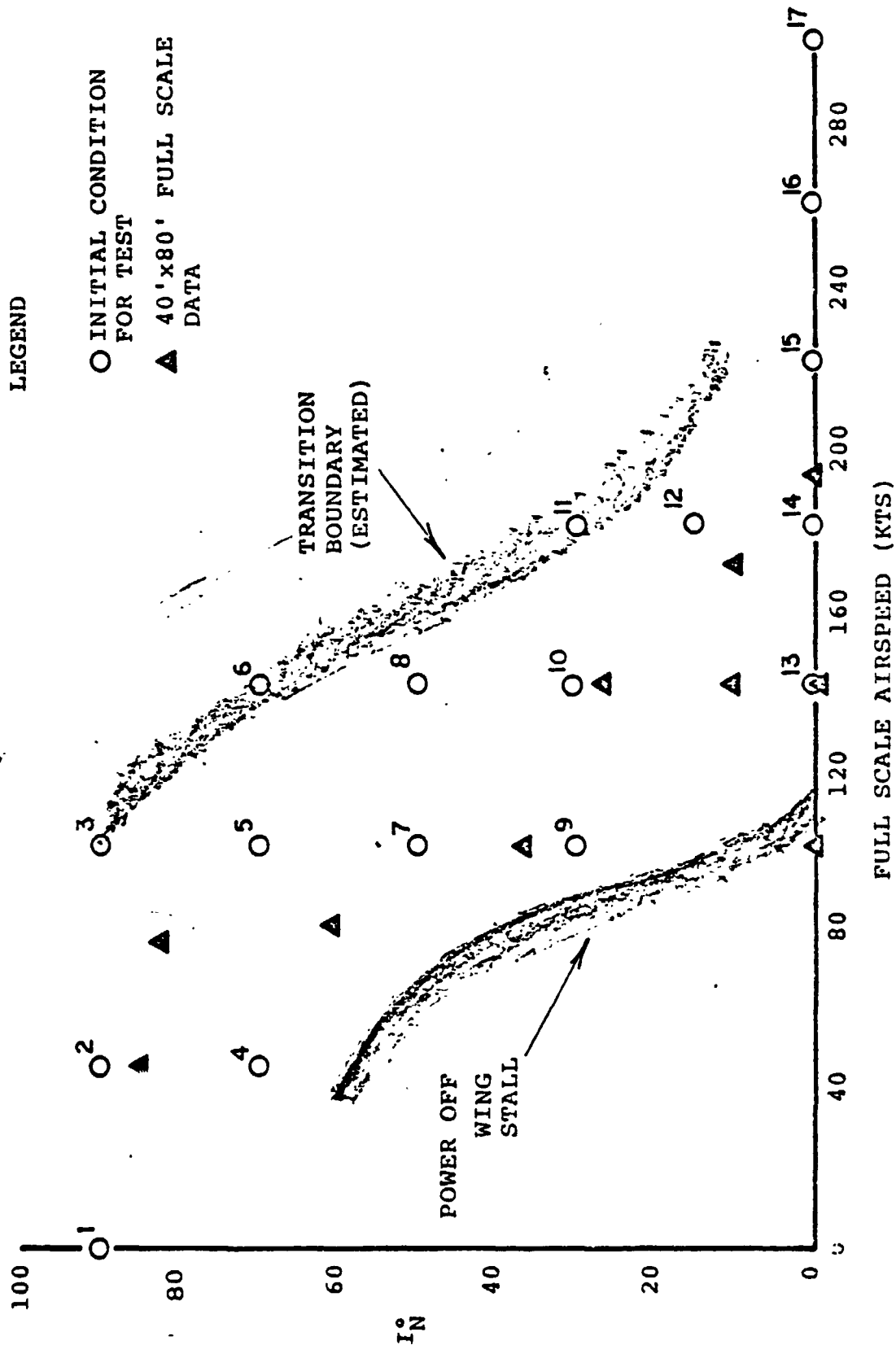


Figure 7. Scope of Test; Initial Test Conditions

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initial test conditions. Seventeen initial test conditions are shown and numbered. Data obtained at conditions 1 through 4 is to be found in Volume I. This report contains data from conditions 9, 10, 11 & 12 which are $I_N = 30^\circ$ and 15° at full scale airspeeds of 100, 140 and 180 knots.

The rest of the transition data (conditions 5, 6, 7 and 8) is to be found in Volume II and the cruise flight data (conditions 13 through 17) in Volume IV.

At each initial test condition an approximate aircraft trim altitude was set up and the following variables exercised in turn, angle of attack, yaw angle, longitudinal cyclic pitch, lateral cyclic pitch, collective pitch, wing flap setting and RPM. Each data file corresponding to an initial flight condition contains the six components of force and moment (and power) on the left rotor, the right rotor and also the total airframe forces and moments. This data is followed by alternating chord bending, flap bending and pitch link loads on the left and right rotor respectively. The test variables are first plotted versus α then yaw, etc. as depicted in Table 3. Each appendix number corresponds to a flight condition. For example appendix 9 corresponds to flight condition 9 which is $I_N = 30^\circ$ at a speed which is representative of full scale 100 knots. Thus Figures 9-001 through 9-024 are the measured data as functions of α . Figures 9-025 through 9-048 are the measured data as

TRANSITION DATA ORGANIZATION

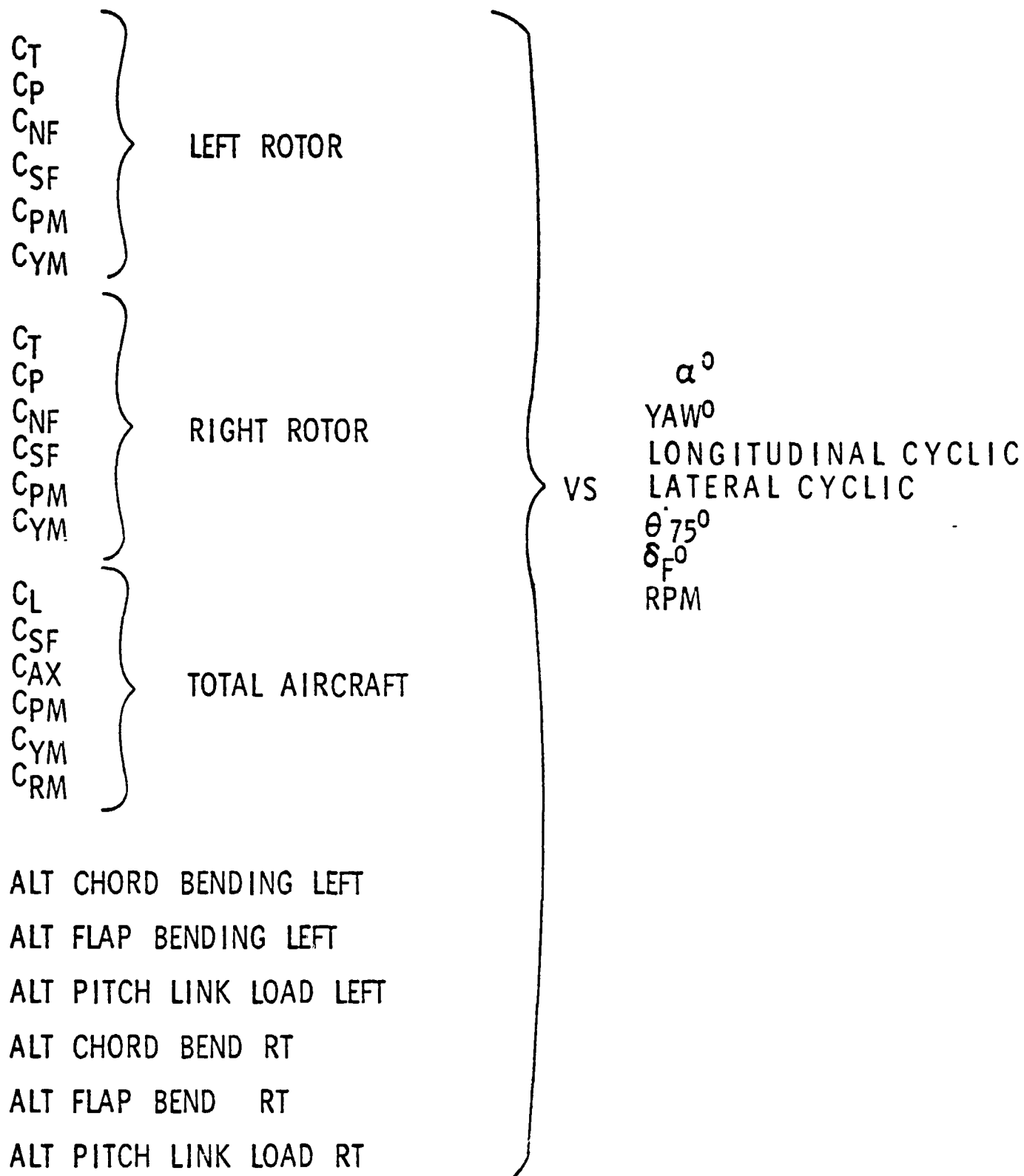


TABLE 3. TEST VARIABLE PLOTTING SEQUENCE

functions of yaw angle and so on. This organization and sequencing of test information is only changed when measured data were found to be spurious for reasons of instrumentation failure, etc. as noted in the instrumentation log given in Volume I.

Section 3 of this report contains notes pertaining to the data sets shown in this document and provides an account of the cases where data was found to be in error and discarded and also those cases where although no proof of error is apparent the information should be treated with caution. Fortunately, these cases amount to a small fraction of the overall results.

One further notation is necessary before the data provided can be usefully interpreted. During a run where one test variable is being exercised it is necessary to know the constant values of the other test variables. These data are identified in Table 4 for test conditions 9 through 12 and are referenced by data set number, figure number and test variable name all of which are also given on the corresponding data graphs in the appendix. Thus for data set 9 the test constants during the angle of attack sweep on Run 89 (Data figures 9-001 to 9-024) can be obtained from Table 4 as

| | |
|--------------------|----------|
| V Full Scale (Kts) | 99 Kts. |
| α fuse | Variable |

238-10000-3

TEST VARIABLES HELD CONSTANT

| CONDITION | PARAMETER VARIED | FIGURES | V | α_{FUSE} | IN | RPM | θ_{75L} | A_{1L} | B_{1L} | δF_L | θ_{75R} | A_{1R} | B_{1R} | δF_R | β | DATA SET |
|---|---|---------|-----|-----------------|----|------|----------------|----------|----------|--------------|----------------|----------|----------|--------------|---------|-------------|
| TRANSITION IN = 30° VFS = 100 KTS | α YAW ANGLE LONG. CYC. LAT. CYC. δ_{75} δ_{FLAP} RPM | 1-24 | 100 | | 26 | 1063 | 20.0 | 2.8 | 3.4 | 30.0 | 18.2 | 3.7 | 3.8 | 30.0 | 0 | 9 ↓ |
| | | 25-48 | 100 | 3.5 | 28 | 1063 | 20.6 | 2.8 | 3.4 | 30.0 | 18.2 | 3.7 | 3.6 | 30.0 | 0 | |
| | | 49-72 | 100 | 3.5 | 29 | 1063 | 20.7 | 2.8 | | 30.0 | 18.0 | 3.6 | | 30.0 | 0 | |
| | | 73-96 | 100 | 3.5 | 29 | 1063 | 20.8 | | 3.6 | 30.0 | 18.1 | | 3.6 | 30.0 | 0 | |
| | | 97-120 | 100 | 3.5 | 29 | 1063 | | 3.1 | 3.4 | 30.0 | | 3.7 | 3.5 | 30.0 | 0 | |
| TRANSITION IN = 30° VFS = 140 KTS | α YAW ANGLE LONG. CYC. LAT. CYC. δ_{75} δ_{FLAP} RPM | 121-144 | 100 | 3.5 | 30 | 1063 | 20.7 | 3.1 | 3.5 | | 18.1 | 3.8 | 3.5 | | 0 | 10 ↓ |
| | | 145-168 | 100 | 3.5 | 30 | | 20.7 | 3.1 | 3.5 | 30.0 | 18.1 | 3.8 | 3.5 | 30.0 | 0 | |
| | | 1-24 | 140 | | 30 | 1065 | 28.8 | 4.5 | 4.0 | 33.0 | 26.9 | 5.1 | 4.3 | 32.0 | 0 | |
| | | 25-48 | 140 | -3.0 | 30 | 1065 | 29.0 | 4.5 | 3.9 | 33.0 | 27.1 | 5.0 | 4.4 | 32.0 | 0 | |
| | | 49-72 | 140 | -3.0 | 30 | 1064 | 29.0 | 4.4 | | 33.0 | 26.0 | 5.0 | | 32.0 | 0 | |
| TRANSITION IN = 30° VFS = 180 KTS | α YAW ANGLE LONG. CYC. LAT. CYC. δ_{75} δ_{FLAP} RPM | 73-96 | 140 | -3.0 | 30 | 1064 | 29.0 | | 3.9 | 33.0 | 27.0 | | 4.4 | 32.0 | 0 | 11 ↓ |
| | | 97-120 | 140 | -3.0 | 30 | 1065 | | 4.4 | 3.7 | 33.0 | | 5.0 | 4.3 | 32.0 | 0 | |
| | | 121-144 | 140 | -3.0 | 30 | 1063 | 29.1 | 4.4 | 3.9 | | 27.0 | 5.1 | 4.3 | | 0 | |
| | | 145-168 | 140 | -3.0 | 30 | | 29.1 | 4.4 | 3.9 | 31.0 | 27.0 | 5.1 | 4.3 | 31.0 | 0 | |
| | | 1-24 | 180 | | 30 | 1065 | 32.1 | 6.0 | 5.0 | 30.0 | 32.3 | 6.0 | 5.3 | 30.0 | 0 | |
| TRANSITION IN = 15° VFS = 180 KTS | α YAW ANGLE LONG. CYC. LAT. CYC. δ_{75} δ_{FLAP} RPM | 25-48 | 180 | -5.9 | 30 | 1065 | 32.1 | 5.9 | 5.0 | 30.0 | 32.2 | 6.0 | 5.3 | 30.0 | 0 | 12 ↓ |
| | | 49-72 | 180 | -5.9 | 30 | 1065 | 32.0 | 6.2 | | 30.0 | 32.0 | 6.0 | | 30.0 | 0 | |
| | | 73-96 | 180 | -5.9 | 30 | 1063 | 32.3 | | 4.8 | 30.0 | 32.2 | | 5.3 | 30.0 | 0 | |
| | | 97-120 | 180 | -5.9 | 30 | 1065 | | 6.3 | 5.0 | 30.0 | | 6.2 | 5.5 | 30.0 | 0 | |
| | | 121-144 | 180 | -5.9 | 30 | 1063 | 31.9 | 6.3 | 5.0 | | 32.3 | 6.4 | 5.5 | | -.1 | |
| TRANSITION IN = 15° VFS = 180 KTS | α YAW ANGLE LONG. CYC. LAT. CYC. δ_{75} δ_{FLAP} RPM | 145-168 | 180 | -5.9 | 30 | | 31.9 | 6.3 | 5.0 | 30.0 | 32.3 | 6.4 | 5.6 | 30.0 | -.1 | |
| | | 1-24 | 180 | | 15 | 945 | 37.5 | 4.2 | 3.5 | 19.5 | 38.0 | 4.0 | 4.1 | 19.7 | 0 | 12 ↓ |
| | | 25-48 | 180 | -1.99 | 15 | 946 | 37.5 | 4.3 | 3.4 | 19.5 | 37.6 | 4.5 | 3.8 | 19.7 | -.5 | |
| | | 49-72 | 180 | -1.99 | 15 | 945 | 37.5 | 4.2 | | 19.5 | 37.7 | 4.0 | | 19.7 | -.5 | |
| | | 73-96 | 180 | -1.99 | 15 | 942 | 37.7 | | 3.5 | 19.5 | 38.0 | | 4.0 | 19.7 | -.5 | |
| TRANSITION IN = 15° VFS = 180 KTS | α YAW ANGLE LONG. CYC. LAT. CYC. δ_{75} δ_{FLAP} RPM | 97-120 | 180 | -1.99 | 15 | 945 | | 4.5 | 3.5 | 19.5 | | 4.0 | 4.0 | 19.7 | -.5 | 12 ↓ |
| | | 121-144 | 180 | -1.99 | 15 | 945 | 37.4 | 4.2 | 3.3 | | 37.6 | 4.3 | 4.0 | | -.5 | |
| | | 145-168 | 180 | -1.99 | 15 | | 37.5 | 4.2 | 3.3 | 20.7 | 37.6 | 4.1 | 4.0 | 20.0 | -.5 | |
| | | 1-24 | 180 | | 15 | 945 | 37.5 | 4.2 | 3.3 | | 37.6 | 4.1 | 4.0 | | -.5 | |
| | | 25-48 | 180 | -1.99 | 15 | 946 | 37.5 | 4.3 | 3.4 | 19.5 | 37.6 | 4.5 | 3.8 | 19.7 | -.5 | |

TABLE 4. TEST VARIABLES HELD CONSTANT

ORIGINAL PAGE IS
OF POOR QUALITY

0238-10000-3

| | |
|----------------------|------|
| I_N | 26° |
| RPM | 1063 |
| $\theta_{.75}$ left | |
| A_1 left | 2.8° |
| B_1 left | 3.4 |
| δ_F left | 30° |
| $\theta_{.75}$ right | 18.2 |
| A_1 right | 3.7° |
| B_1 right | 3.8° |
| δ_F right | 30° |
| Yaw angle 8 | 0° |

3.0 DATA DESCRIPTION

The test data provided in this test volume were obtained on test runs 89 through 102 and 111 through 125. A log of the test program can be found in Volume I, Reference . The purpose of this section is to make the user aware of test conditions or problem areas which impact the interpretation of the information obtained. A complete log of instrumentation changes is provided in Volume I, Reference .

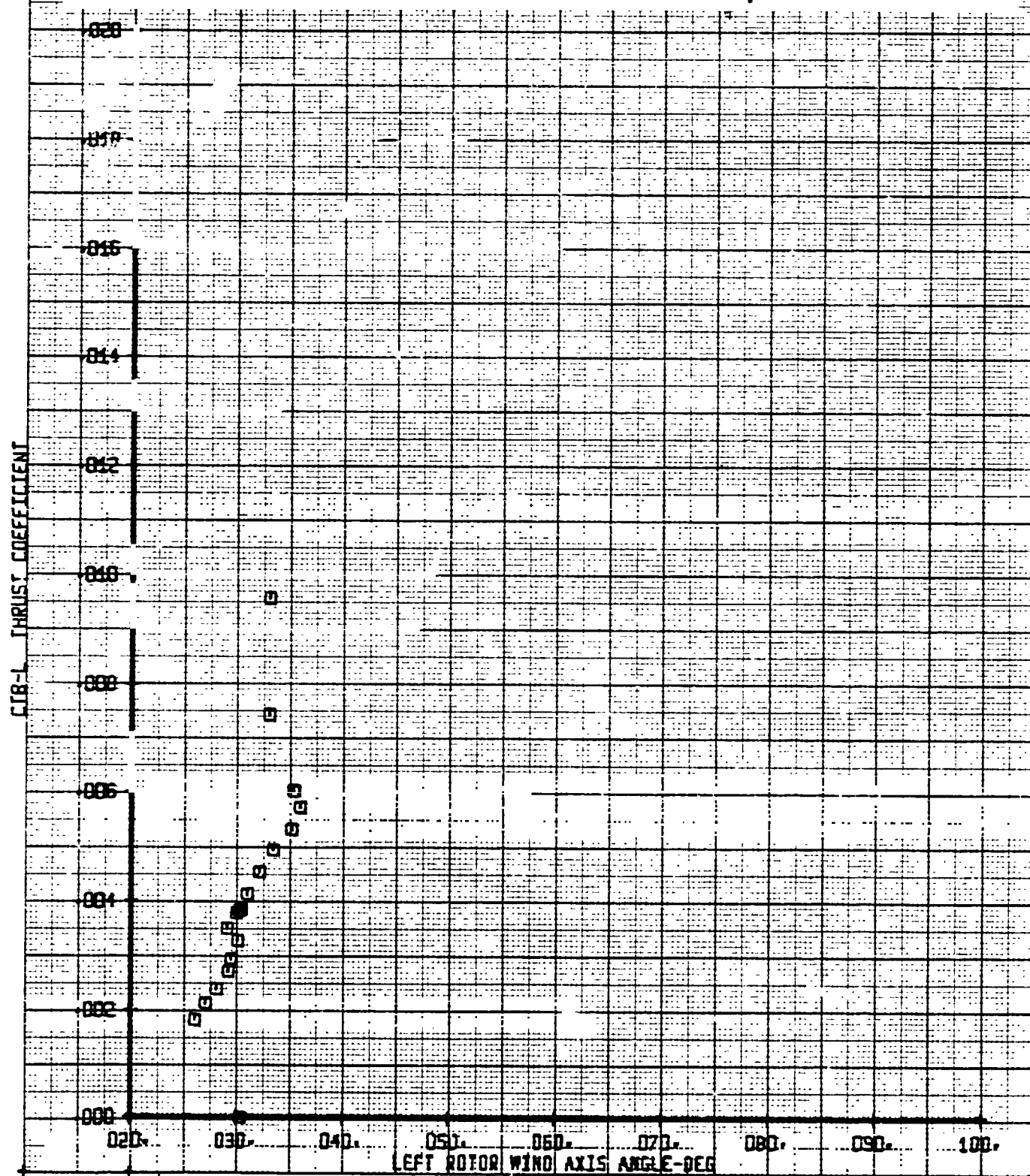
In the four data sets provided in this volume, the only important problem to bear in mind is that the right hand rotor side force channel was discovered to be saturating on run 82 and set to zero until run 96. For this reason the right hand rotor side force and yawing moment data in data set 9 have been deleted. The calibration procedure for the nacelle balances was such that the calibration center was taken as the hub center line. This means that the interaction of side force on yaw moment is quite large and both channels are seriously affected. The other right rotor data channels are included since the interactions are not large; however, interpretation of the right rotor balance data must proceed with caution.

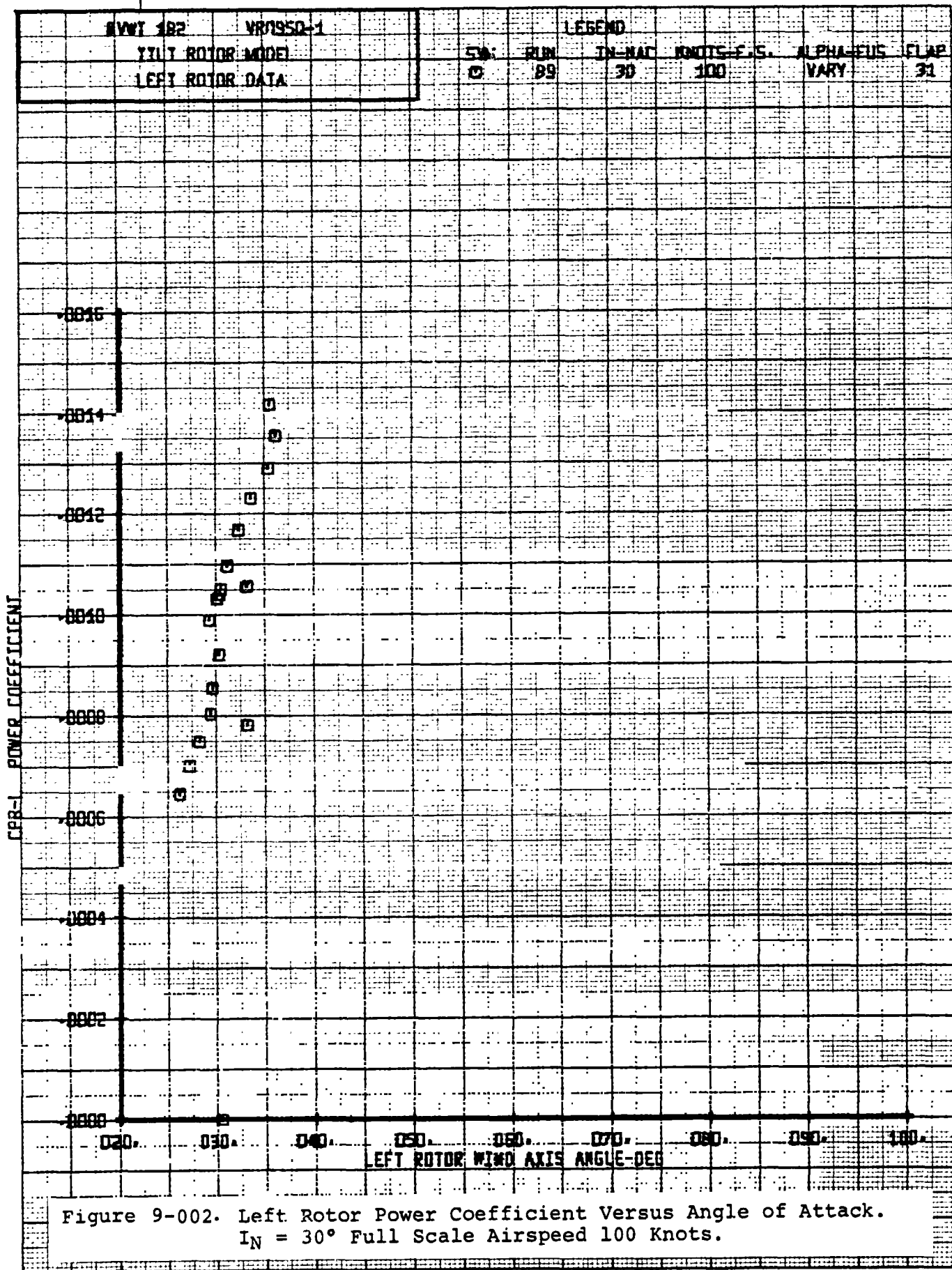
On run 96 and all subsequent runs the left hand rotor side force signal was fed into the right hand side force channel with an inverted sign to preserve sign conventions. For Data Sets 10, 11, and 12, the right rotor side force data reflects the left rotor side force raw signal processed with the right rotor data.

This procedure should yield reasonable right hand rotor results for symmetric test conditions; however, the left rotor data should be considered to be the more precise of the two measurements.

| | | | | | | | | | |
|-----------------|--|----------|--|--------|-----|--------|------------|-----------|------|
| RWVT 182 | | VR0950-1 | | LEGEND | | | | | |
| TIT Rotor Model | | | | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FUS | FLAP |
| LEFT Rotor DATA | | | | 0 | 89 | 30 | 100 | VARY | 31 |

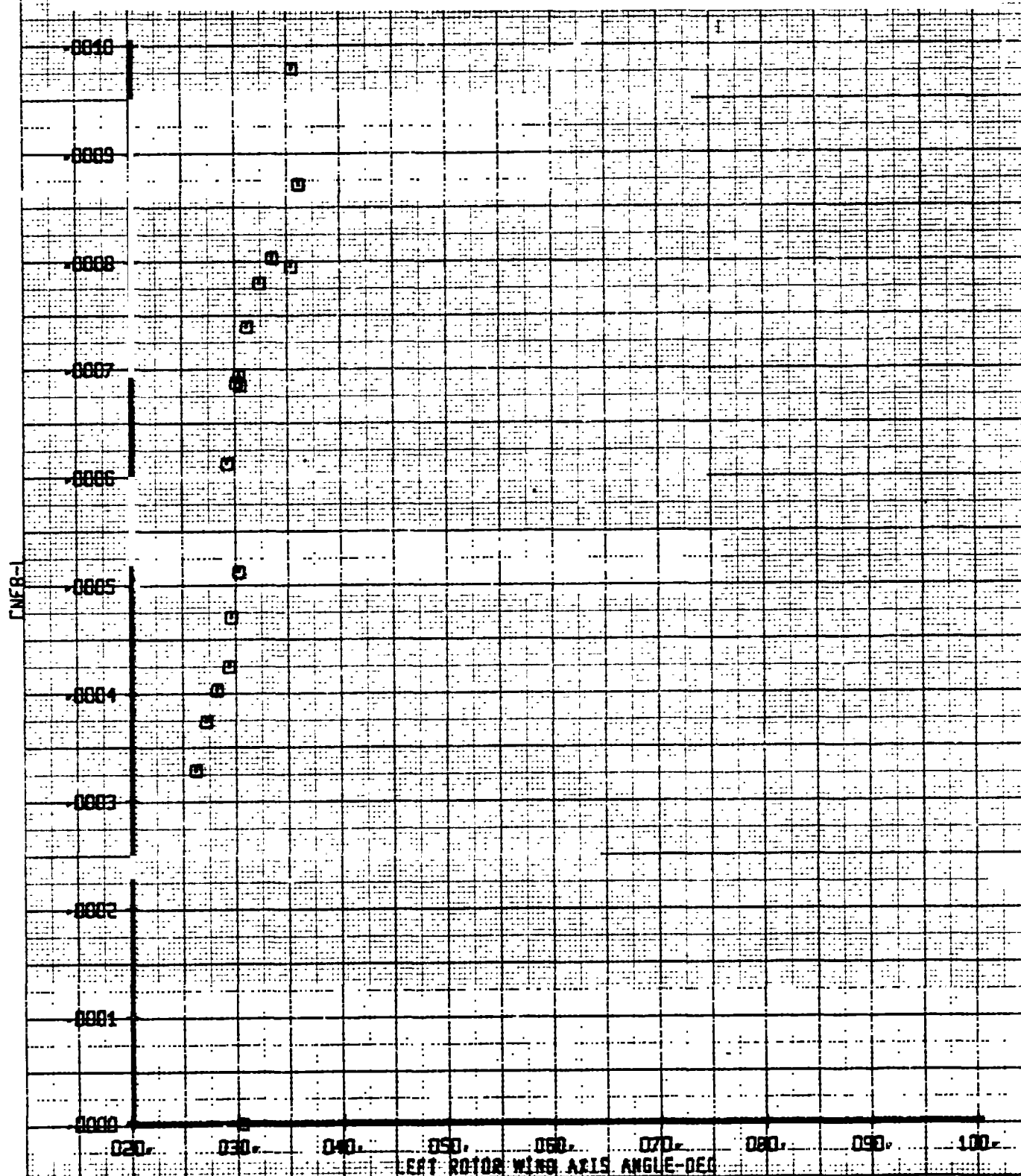
Figure 9-001. Left Rotor Thrust Coefficient Versus Angle of Attack.
IN = 30° Full Scale Airspeed 100 Knots.

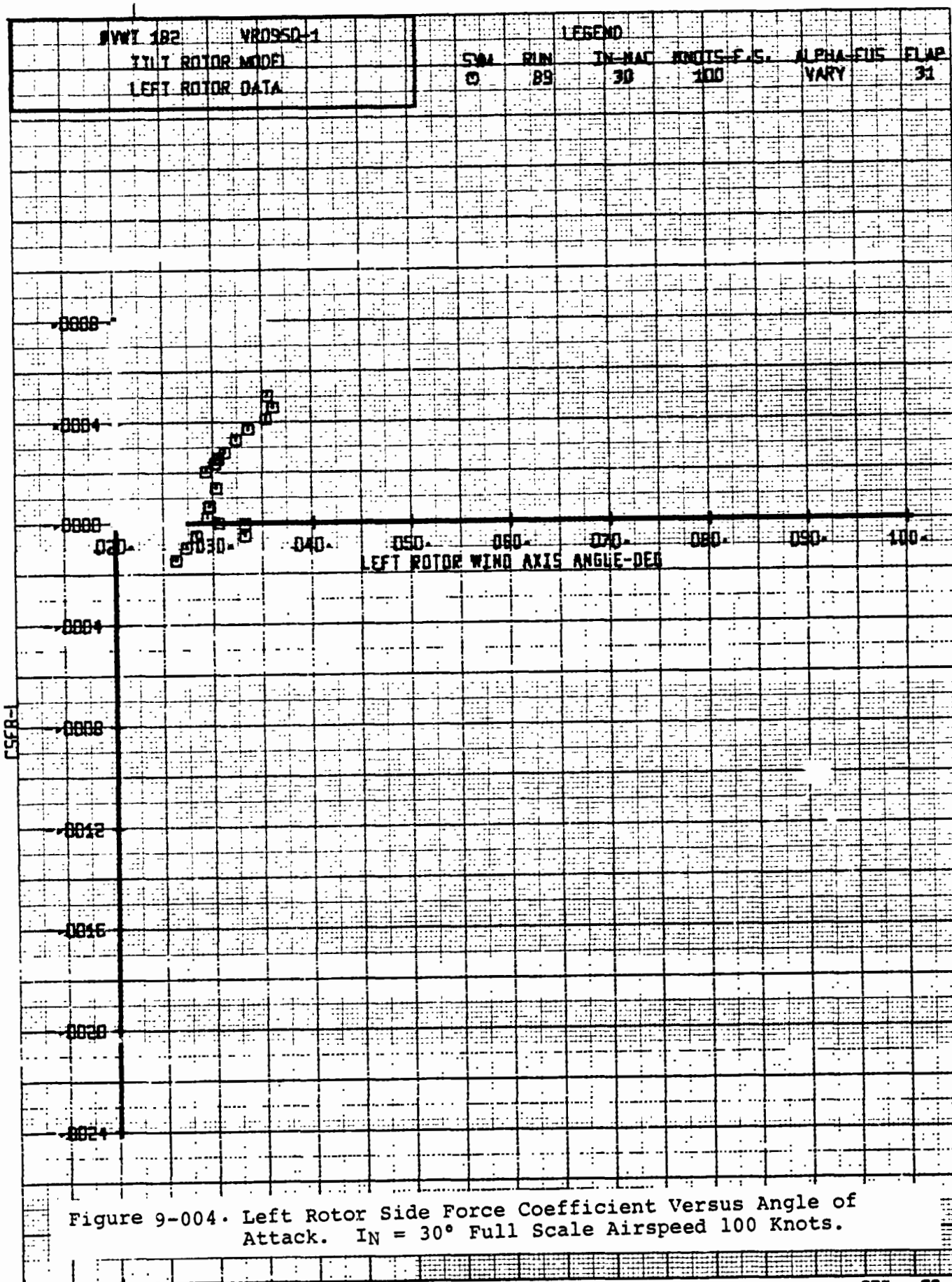


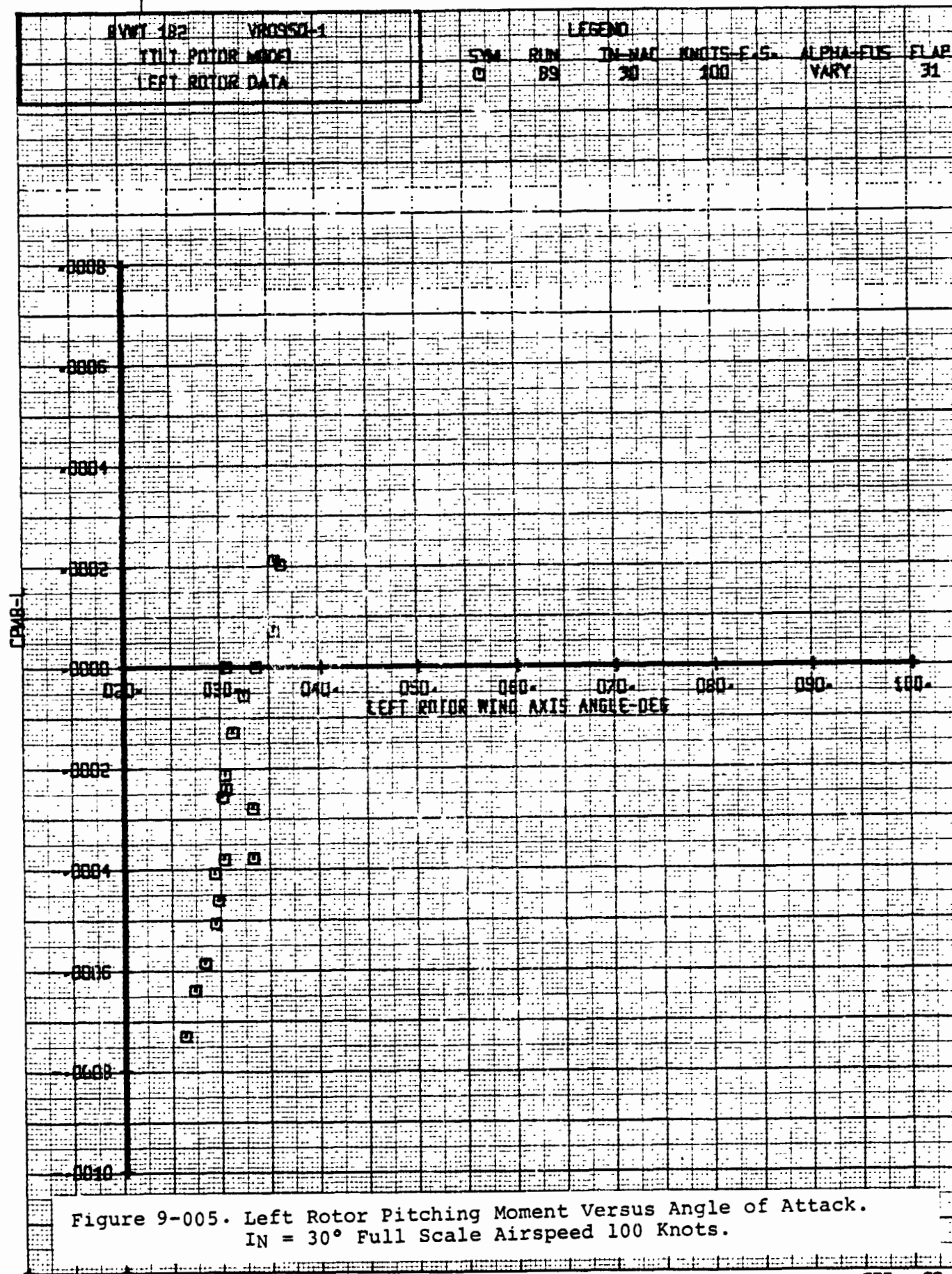


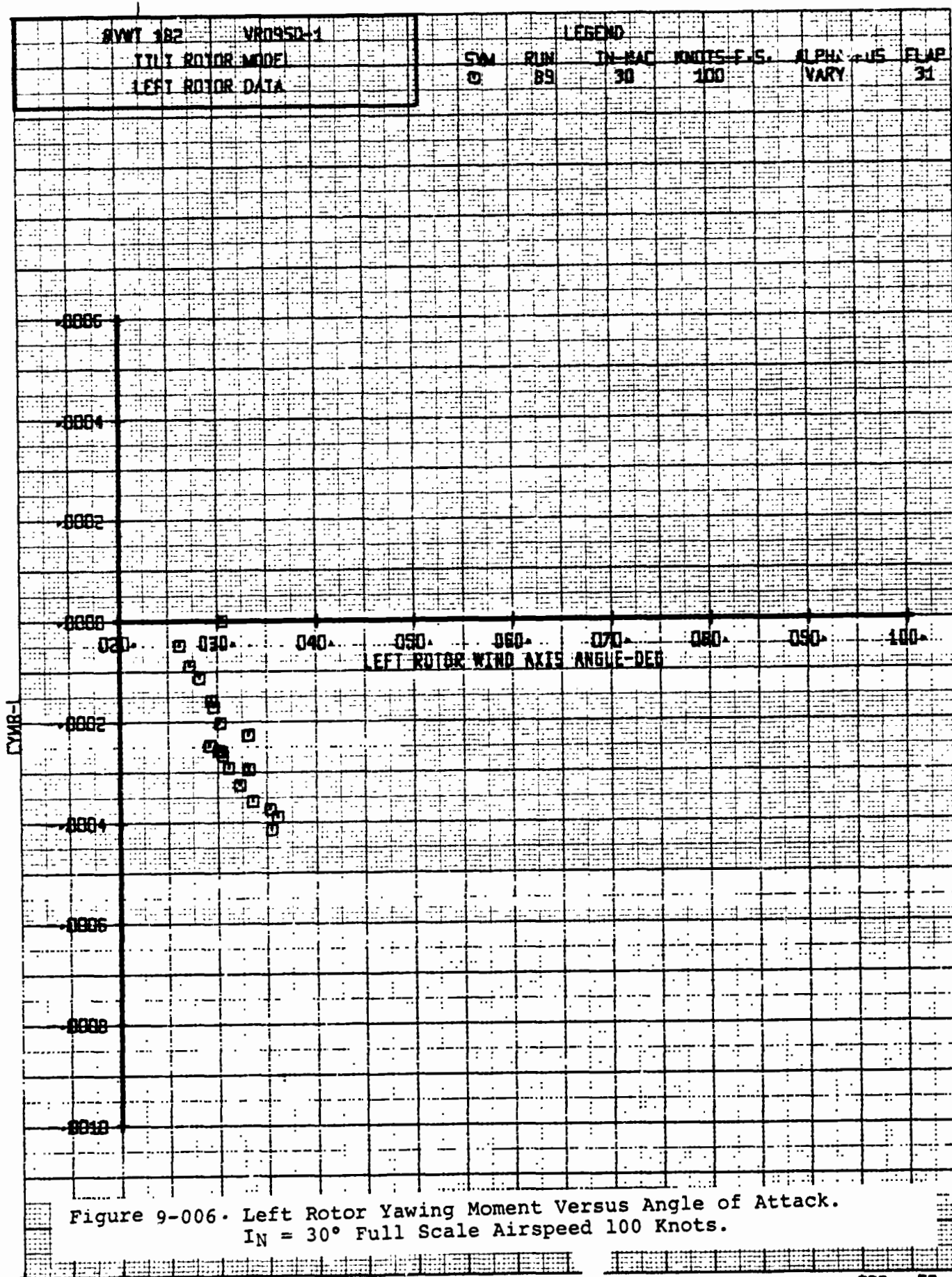
| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | VR0950-1 | LEGEND | | | | |
| LEFT ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FUS |
| LEFT ROTOR DATA | | □ | 89 | 30 | 100 | VARY |
| | | | | | | FLAP 31 |

Figure 9-003. Left Rotor Normal Force Coefficient Versus Angle of Attack. $IN = 30^\circ$ Full Scale Airspeed 100 Knots.



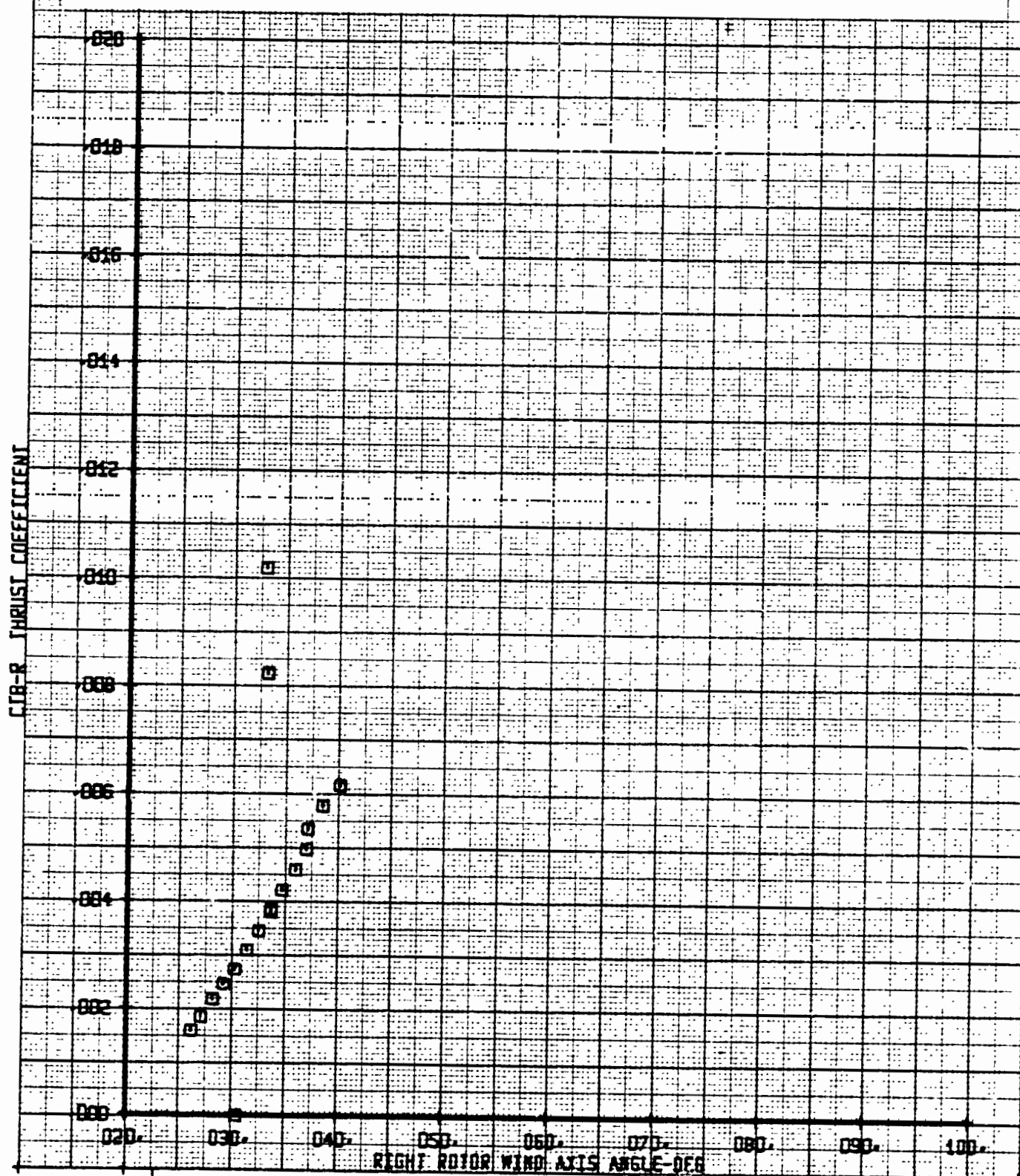






| | | | | | | |
|------------------|----------|--------|-----|--------|------------|------------|
| BVWT 182 | VR0980-1 | LEGEND | | | | |
| TILT ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FLAP |
| RIGHT RL R DATA | | 0 | 89 | 30 | 100 | VARY 31 |

Figure 9-007. Right Rotor Thrust Coefficient Versus Angle of Attack. $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.



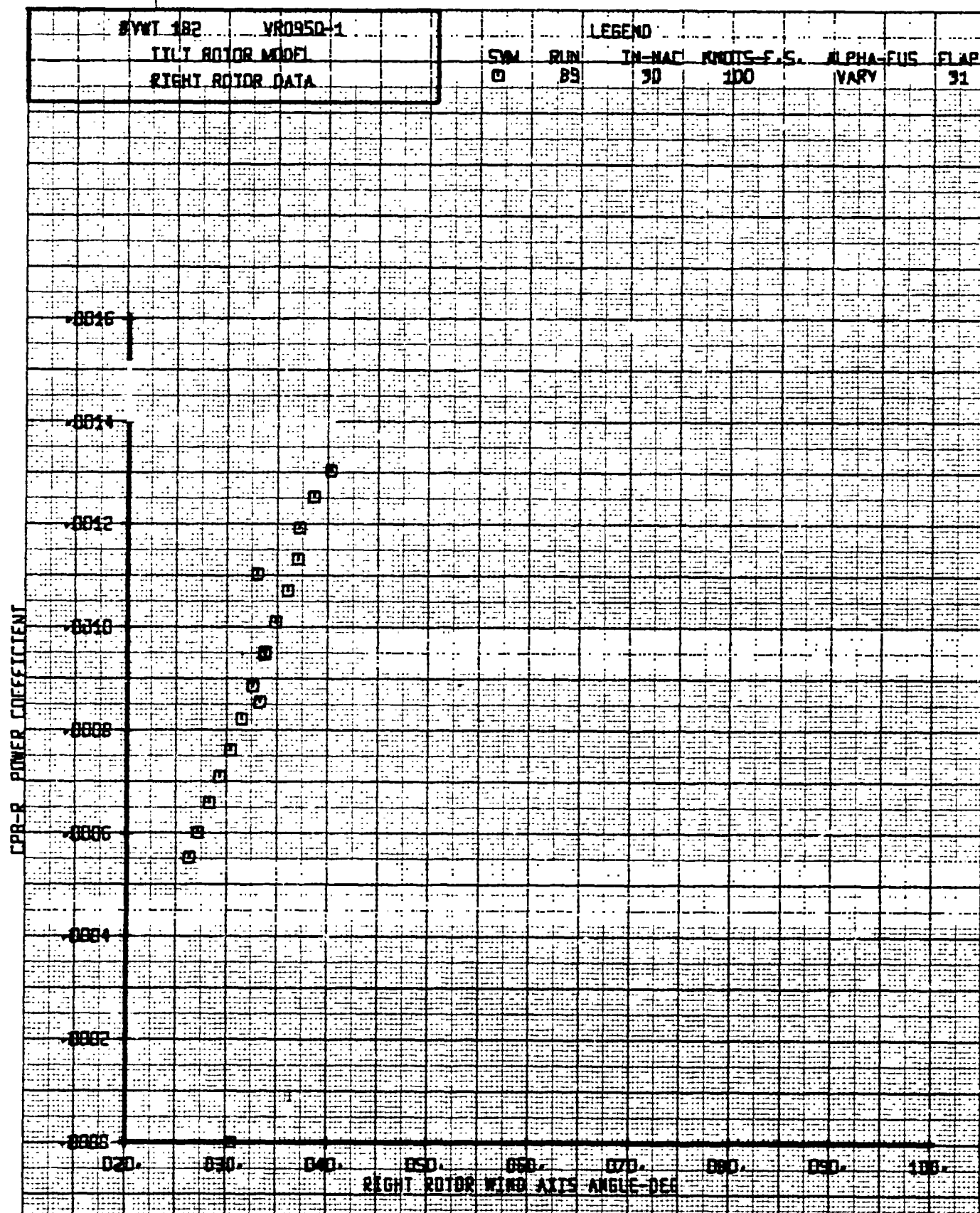


Figure 9-008. Right Rotor Power Coefficient Versus Angle of Attack. $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.

BVWT 182 VR0950-1

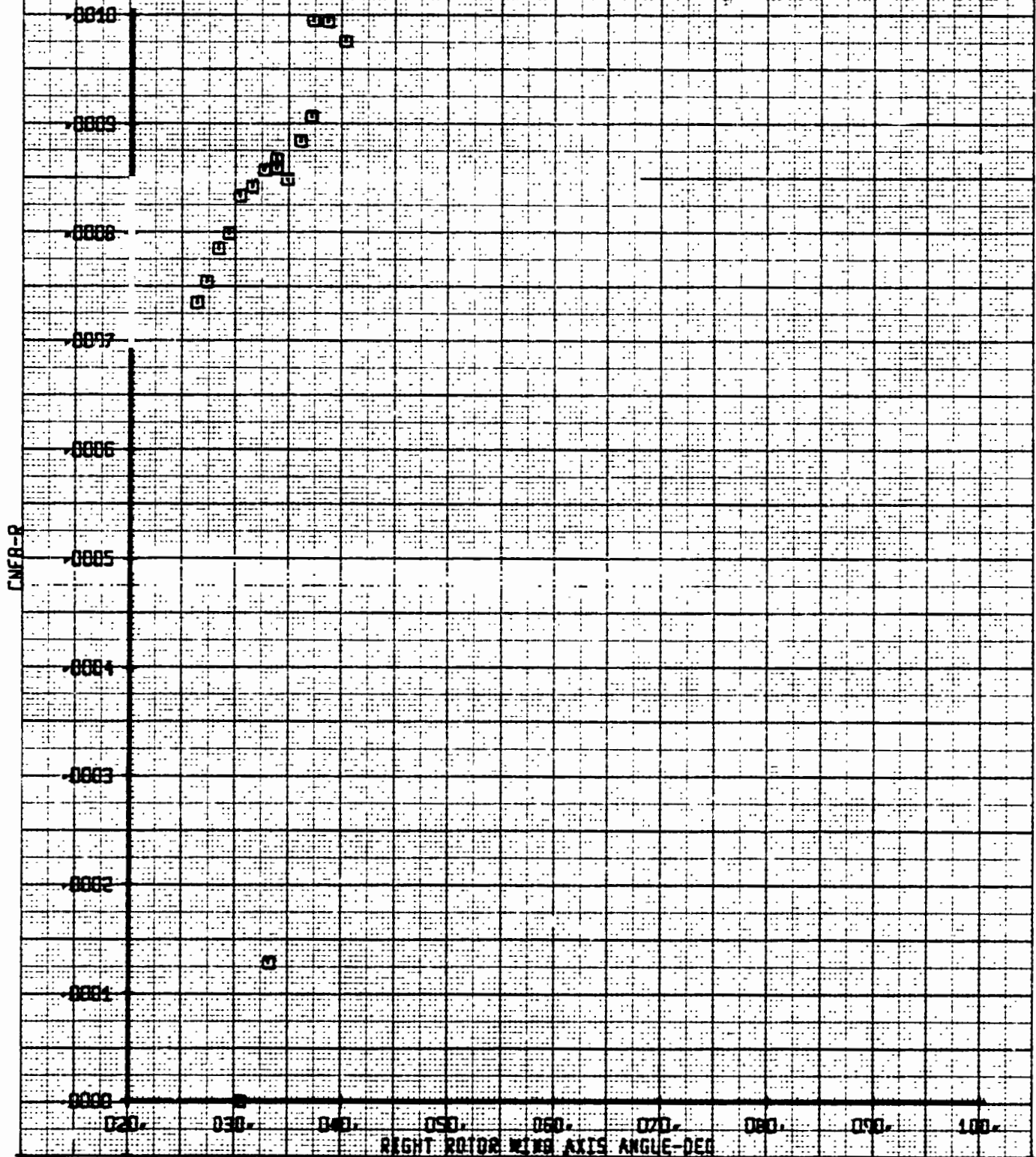
RIGHT ROTOR WING

RIGHT ROTOR DATA

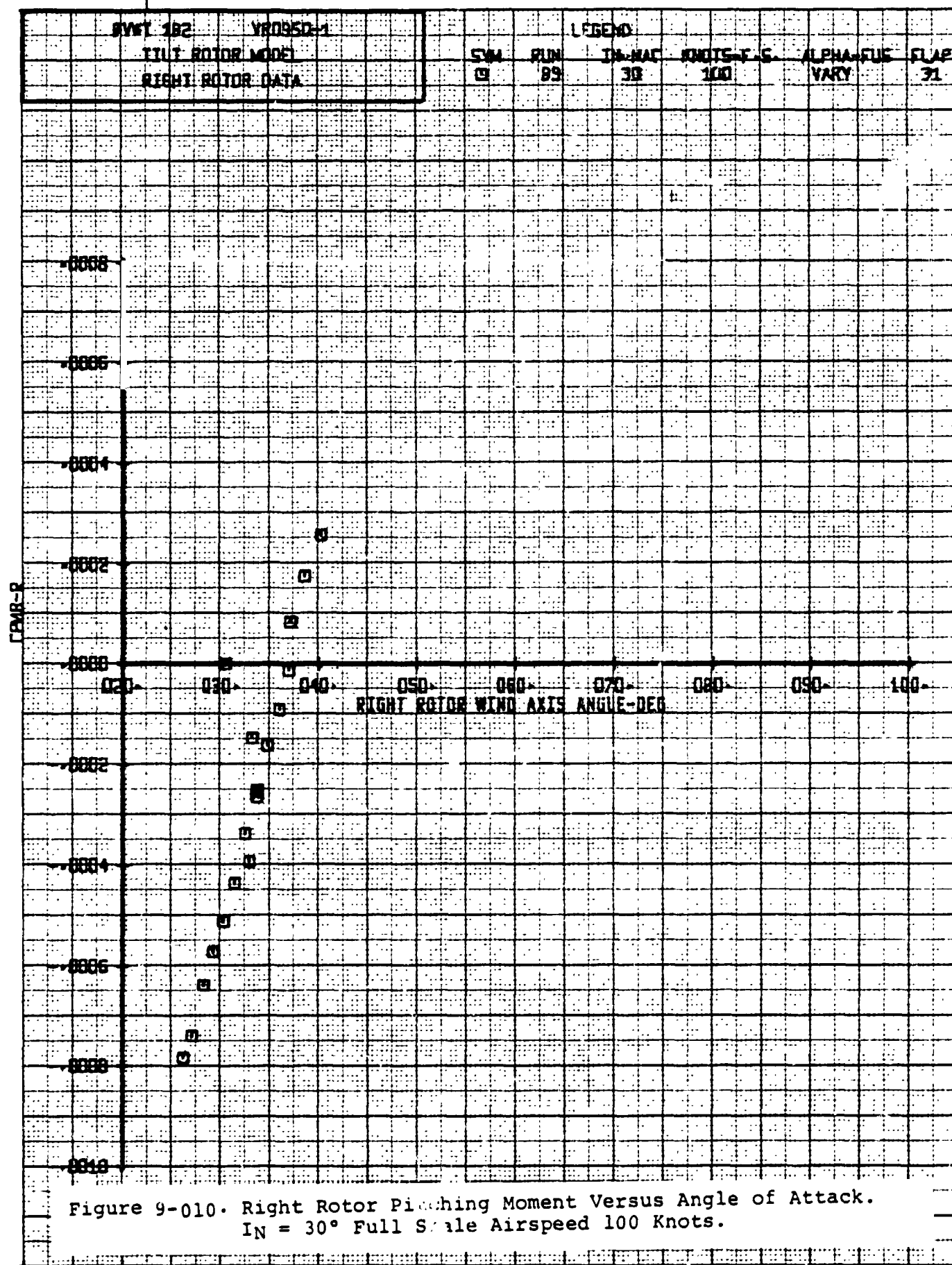
LEGEND

SYM
□RUM
89IN-HAF
30KNOTS-F.S.
100ALPHA-FUS
VARYFLAP
31

Figure 9-009. Right Rotor Normal Force Coefficient Versus Angle of Attack. $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.

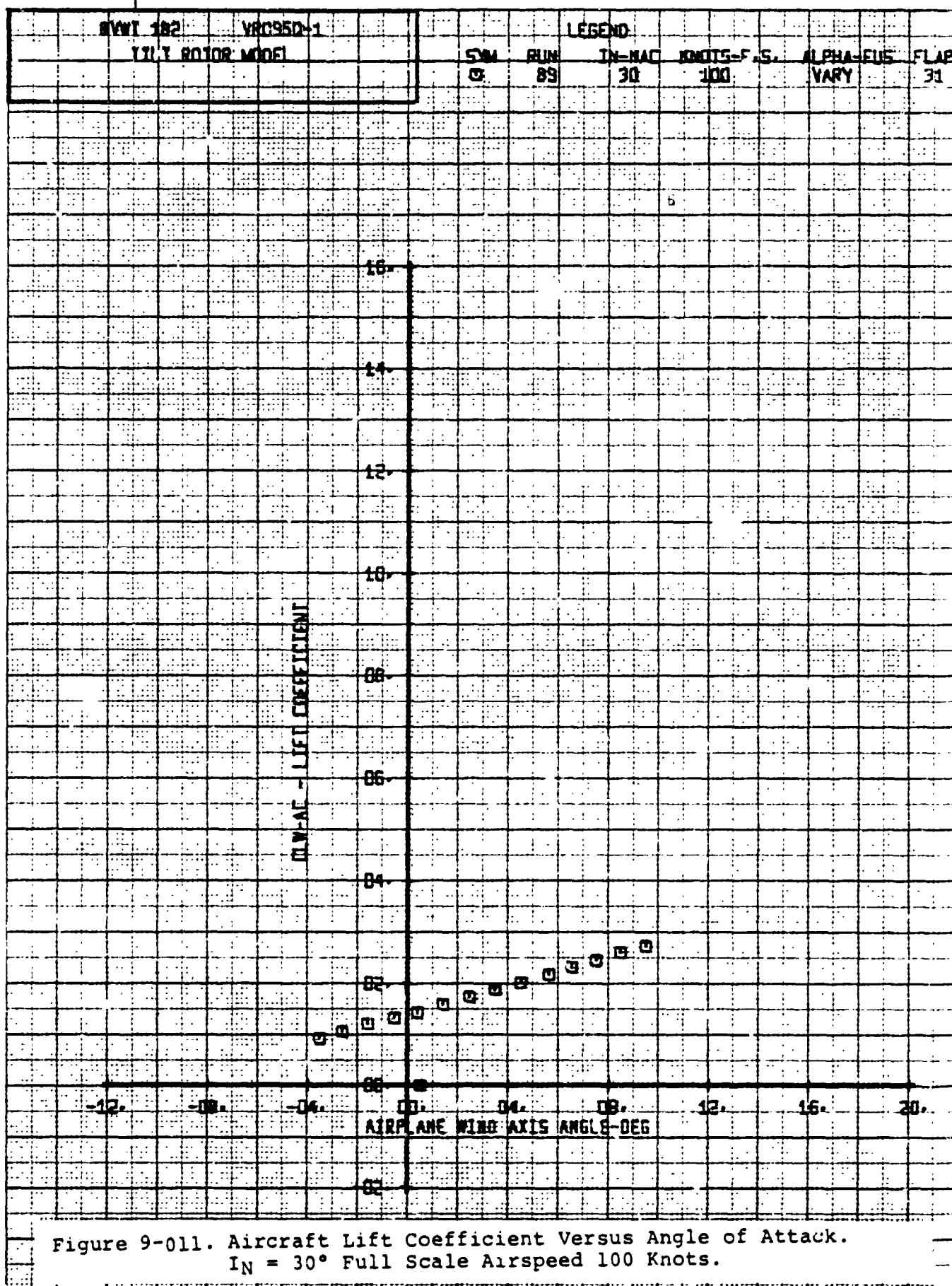


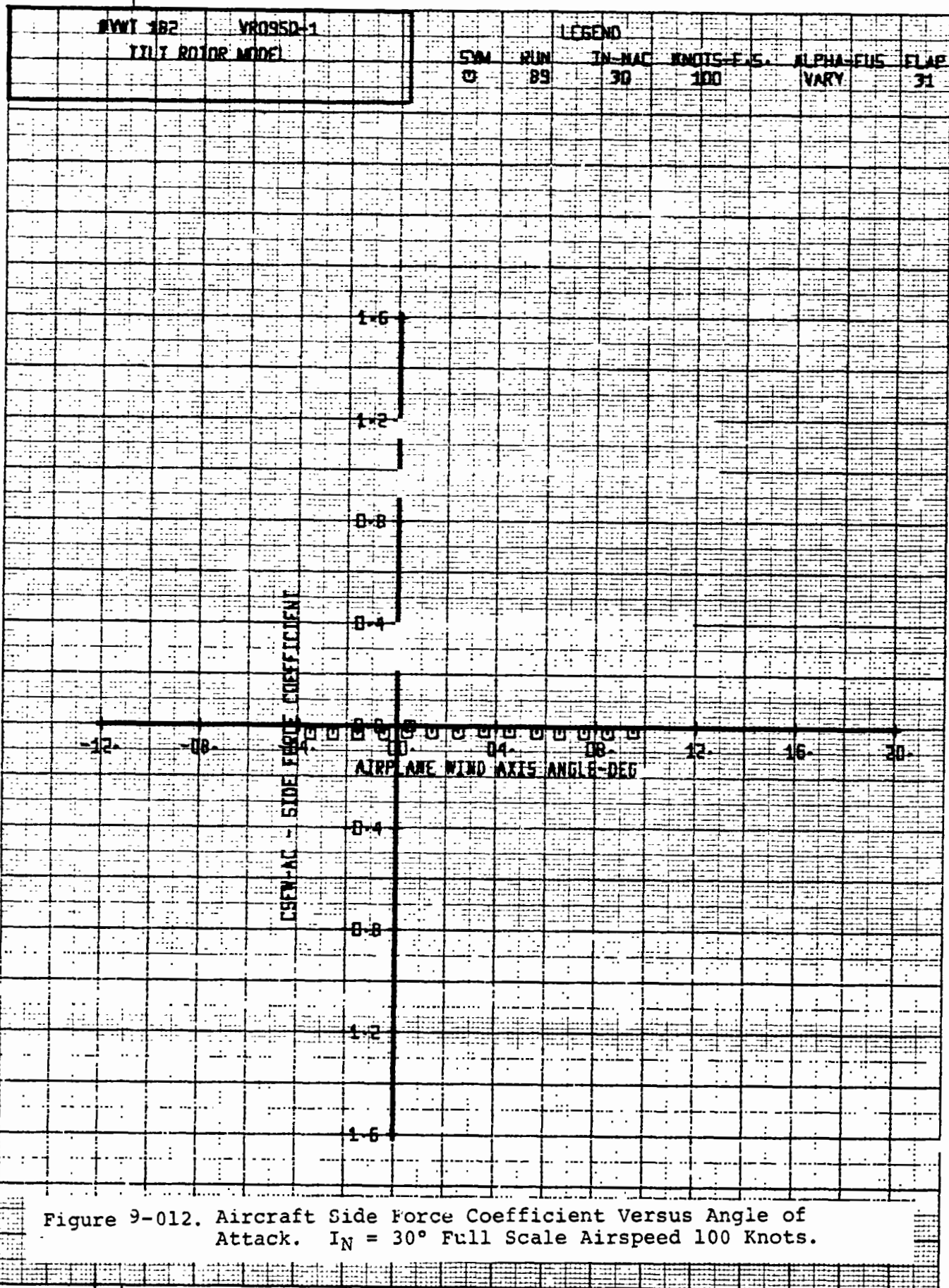
Data Deleted
Refer to Section 3.0

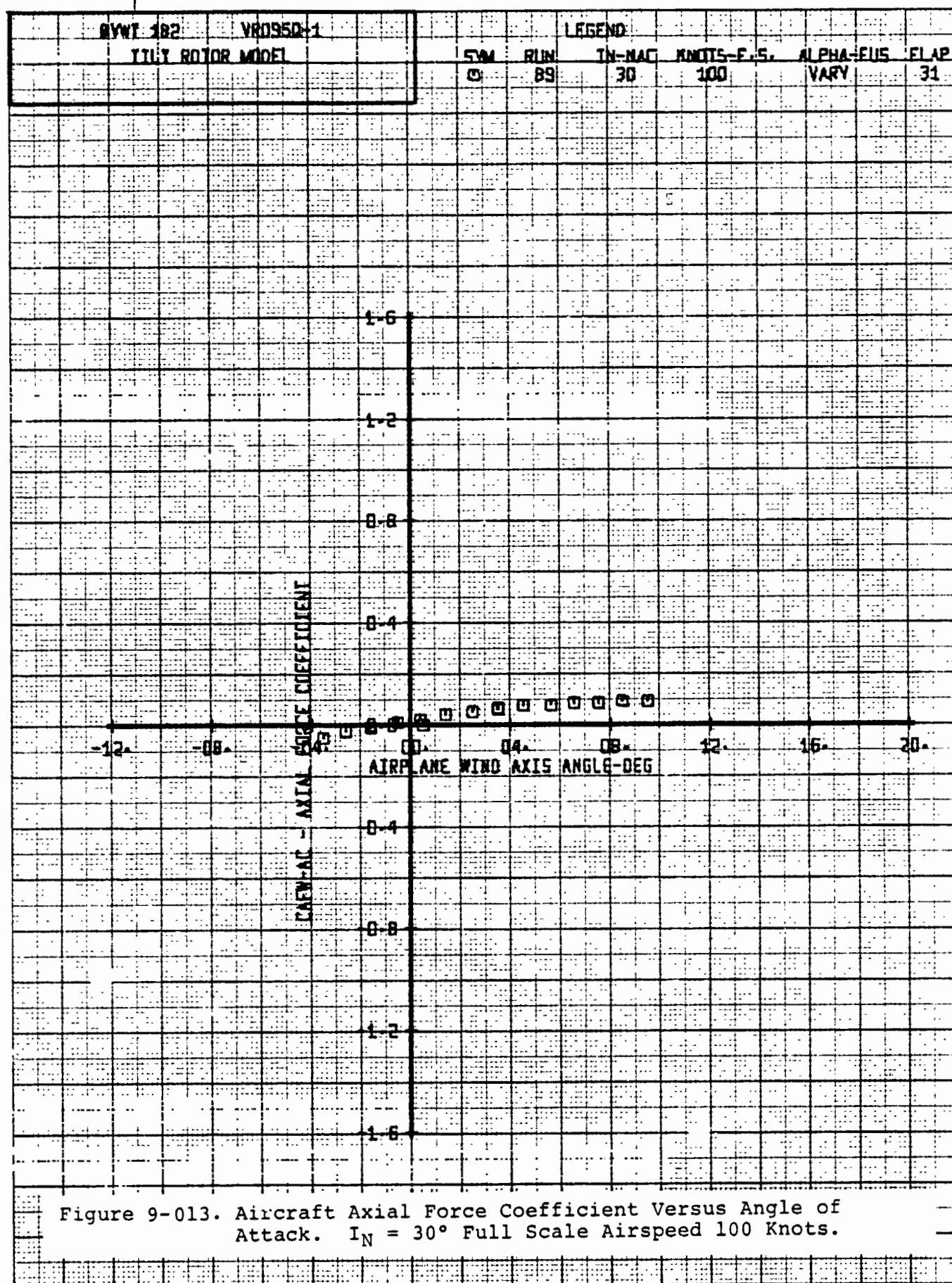


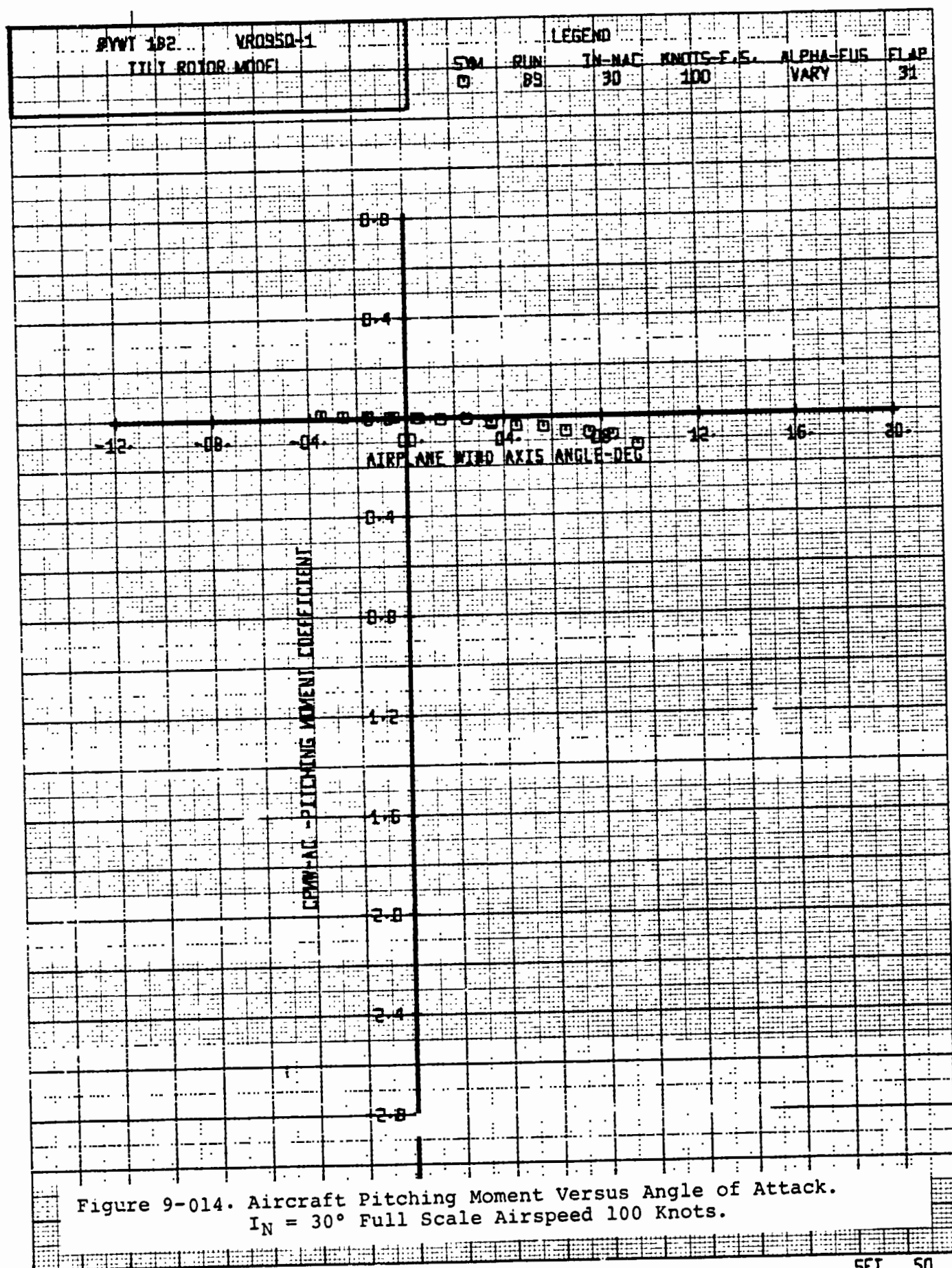
D238-10000-3

Data Deleted
Refer to Section 3.0









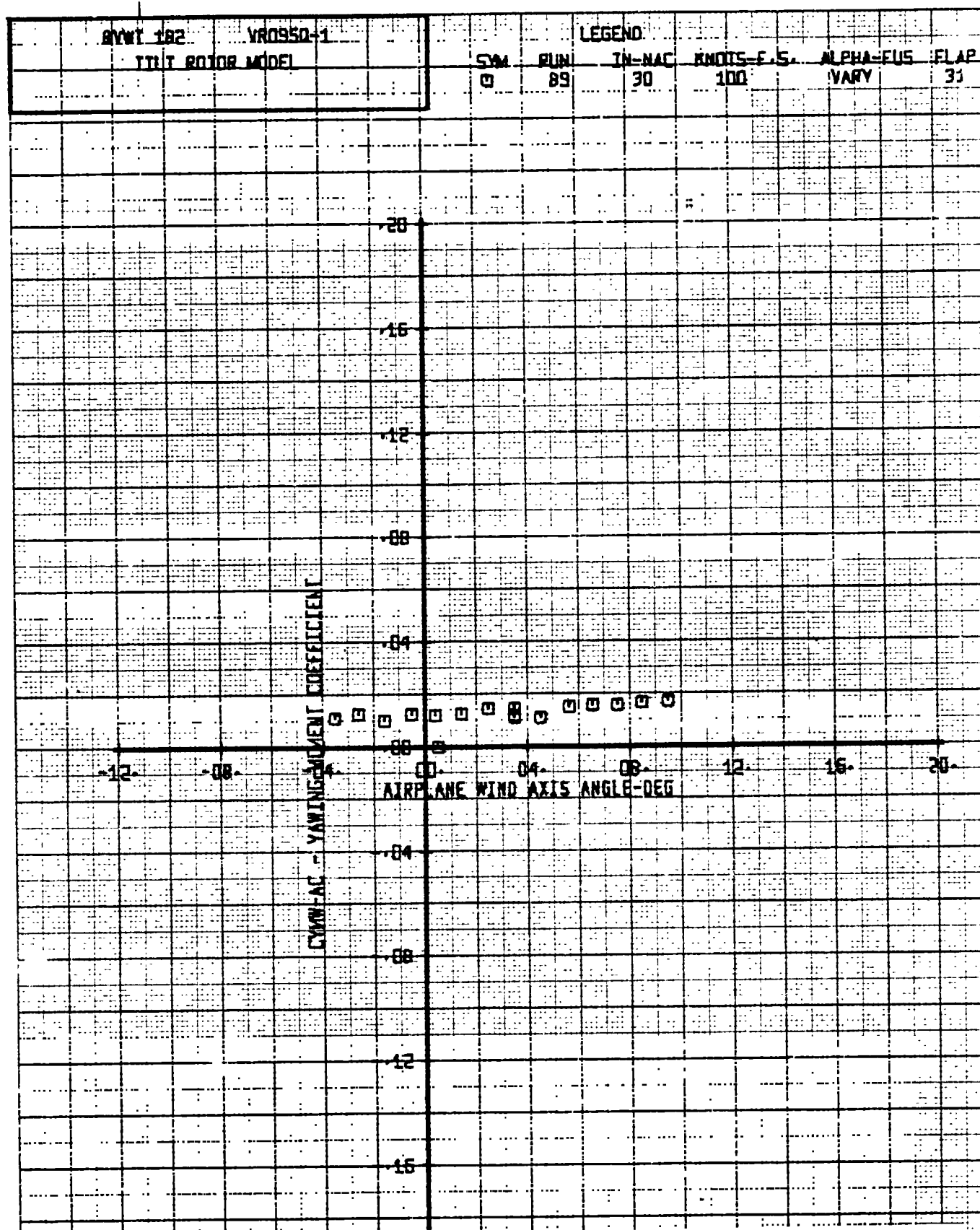


Figure 9-015. Aircraft Yawing Moment Versus Angle of Attack.
 $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.

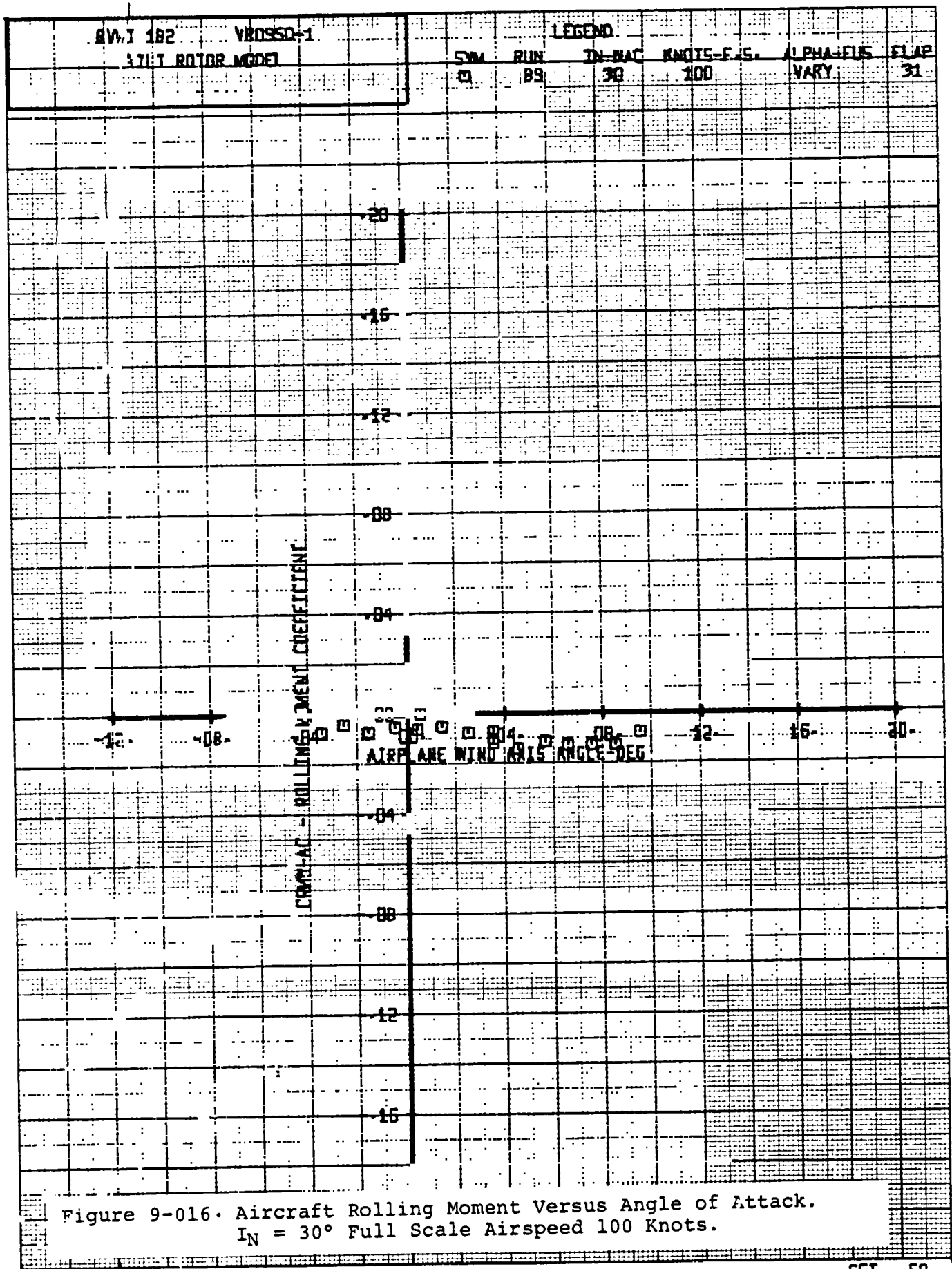


Figure 9-016. Aircraft Rolling Moment Versus Angle of Attack.
 $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.

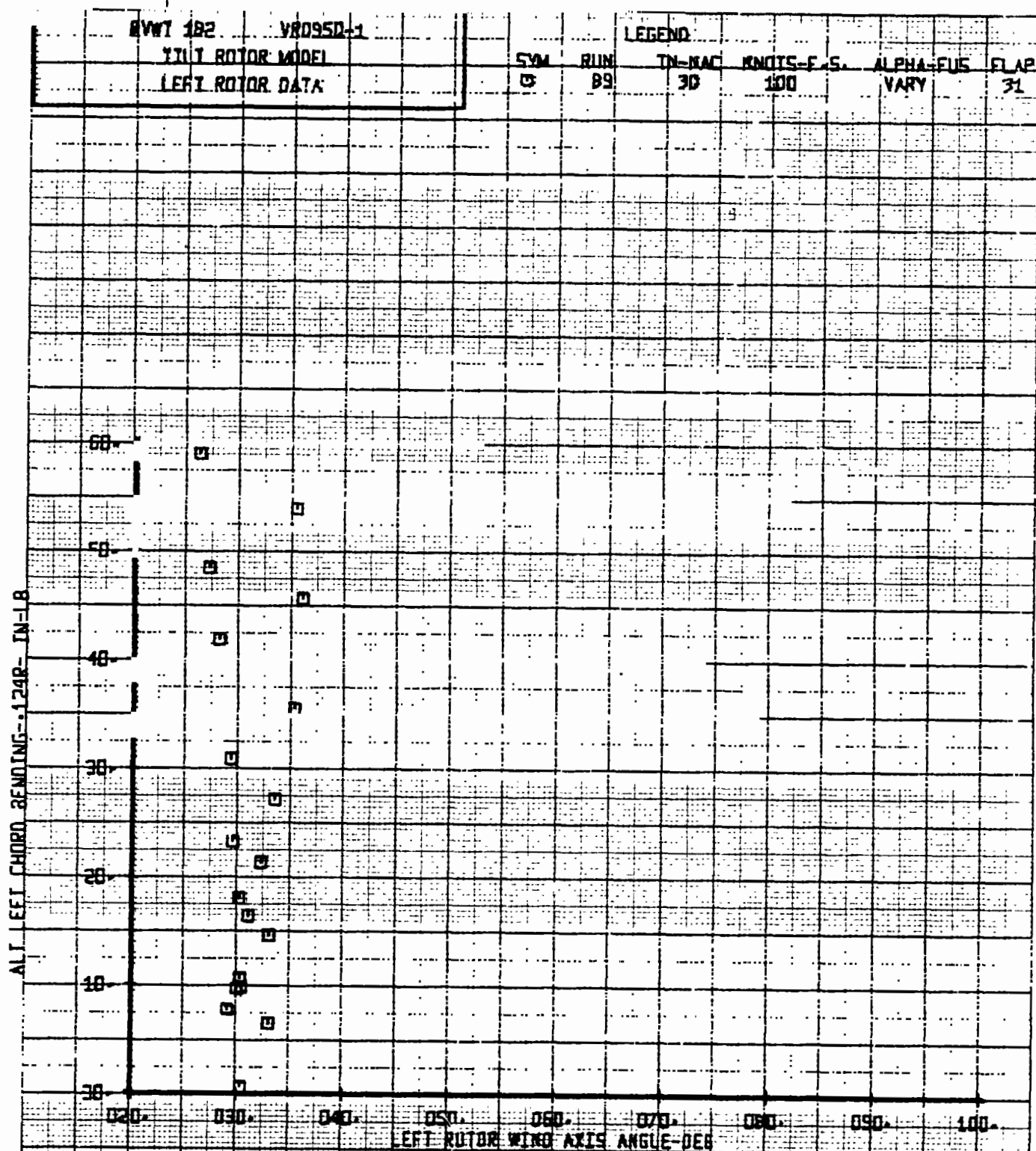
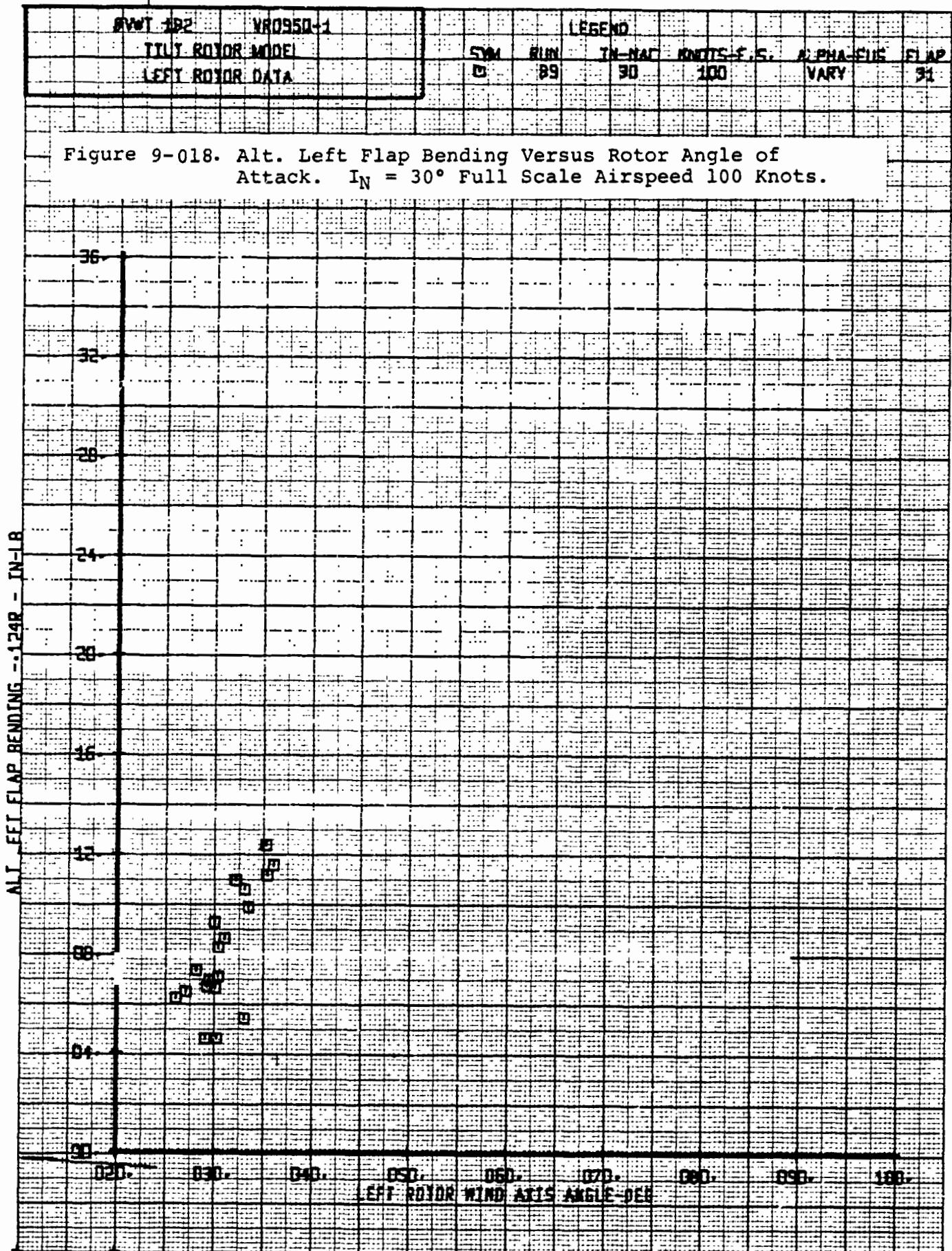
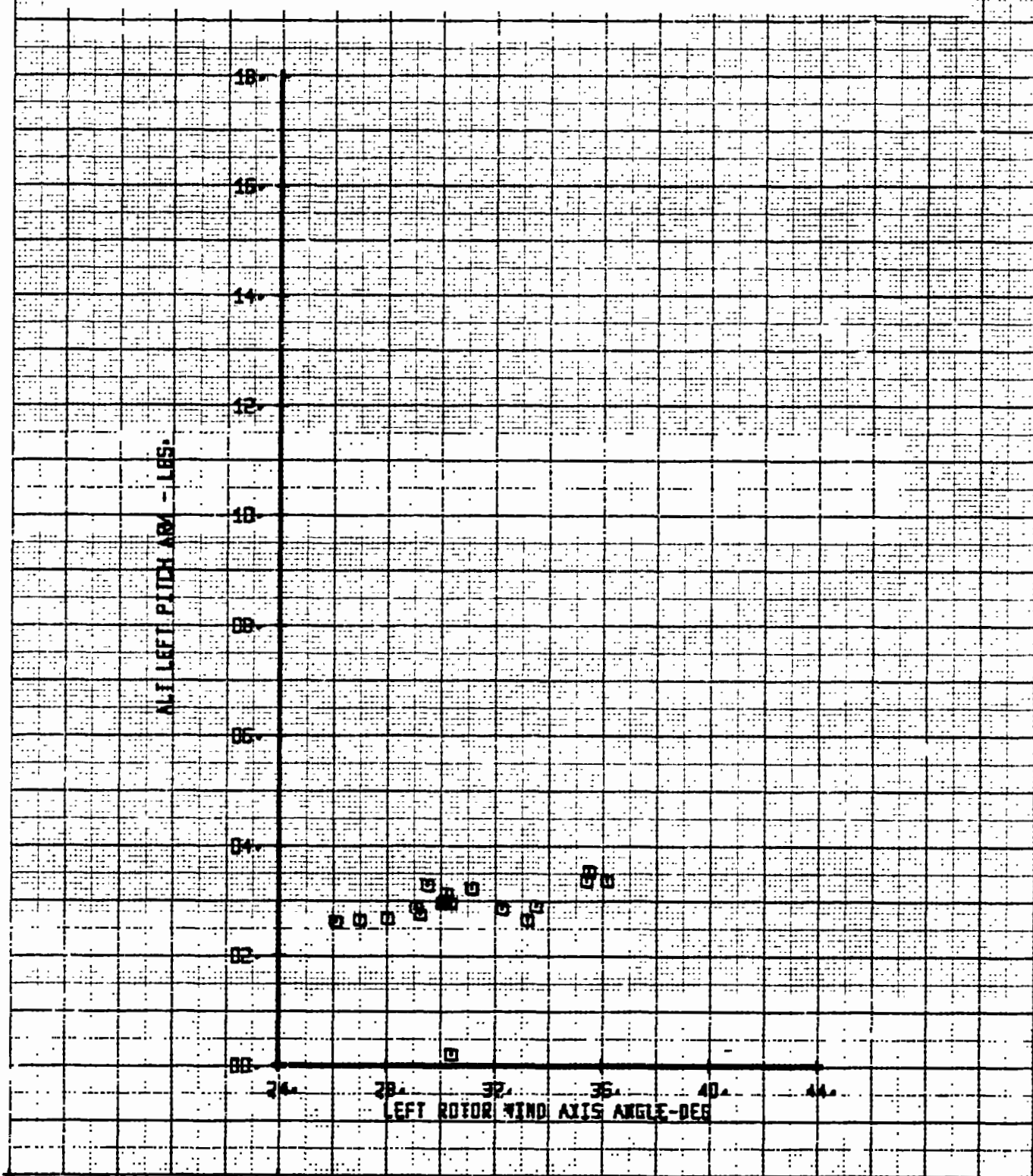


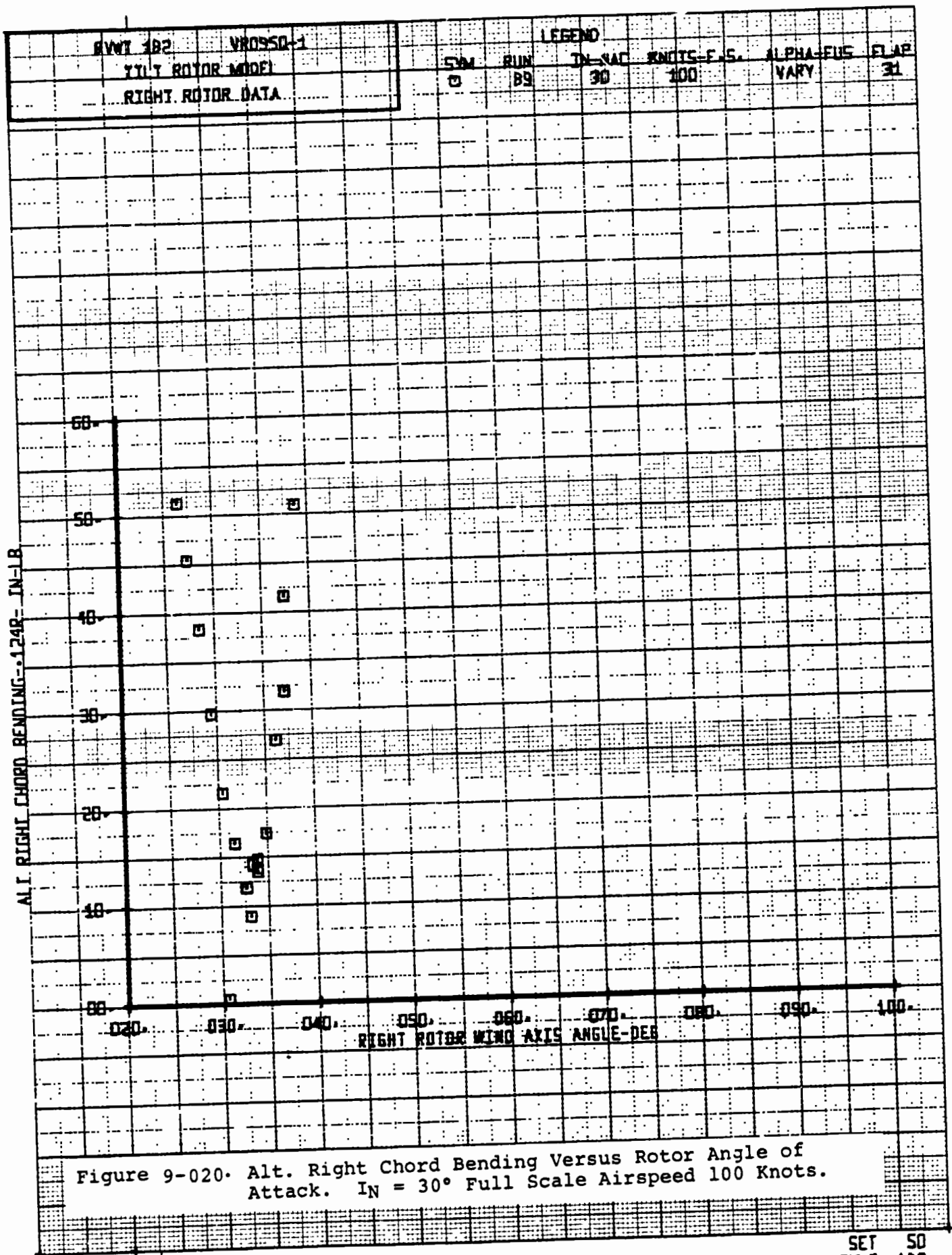
Figure 9-017. Alt. Left Chord Bending Versus Rotor Angle of Attack. $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.

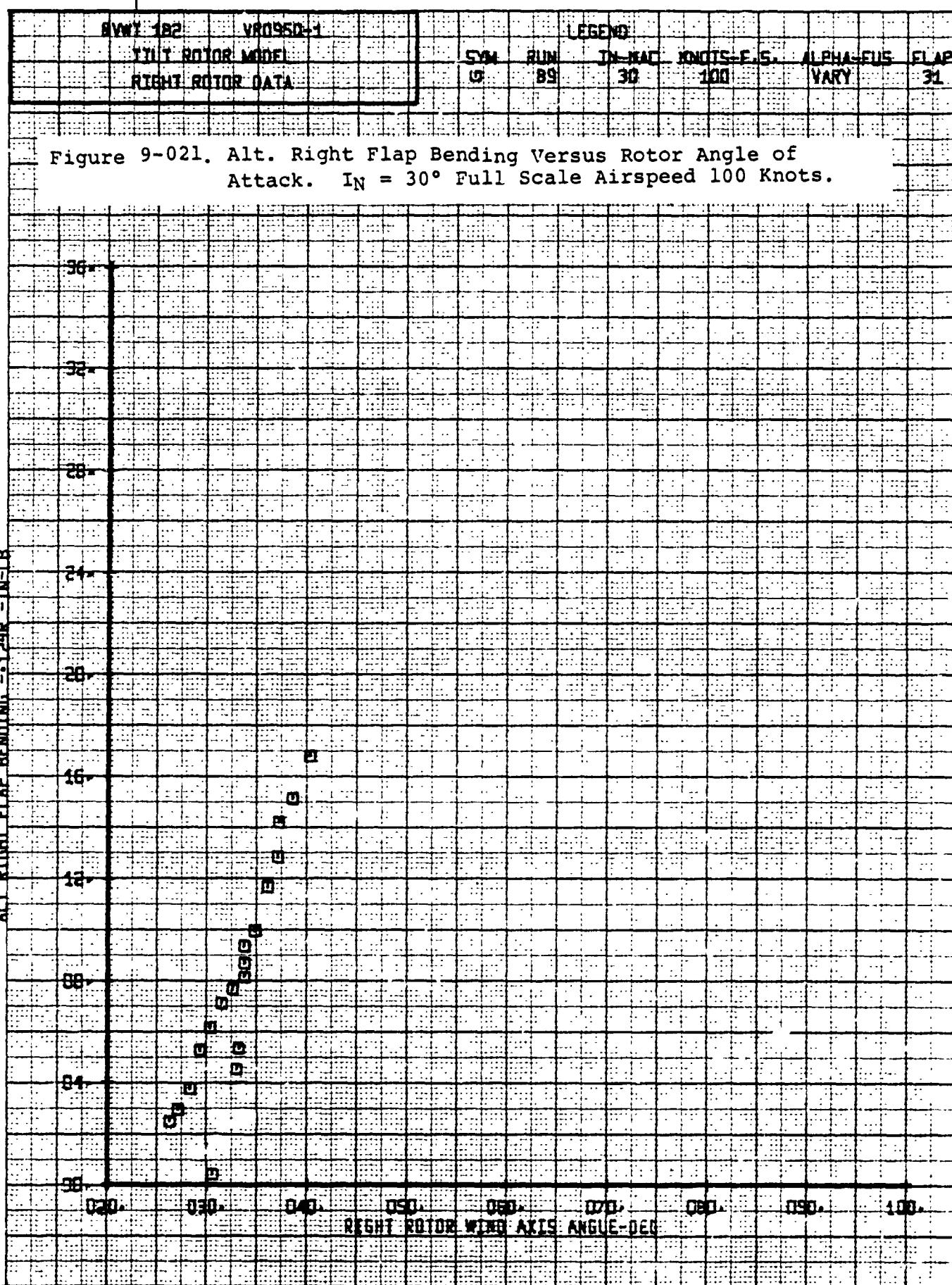


| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | YR0950-1 | LEGEND | | | | |
| TILT ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-E.S. | ALPHA-FUS |
| LEFT ROTOR DATA | | 0 | B9 | 30 | 100 | YARY |
| | | | | | | FLAP 31 |

Figure 9-019. Alt. Left Pitch Link Load Versus Rotor Angle of Attack. $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.

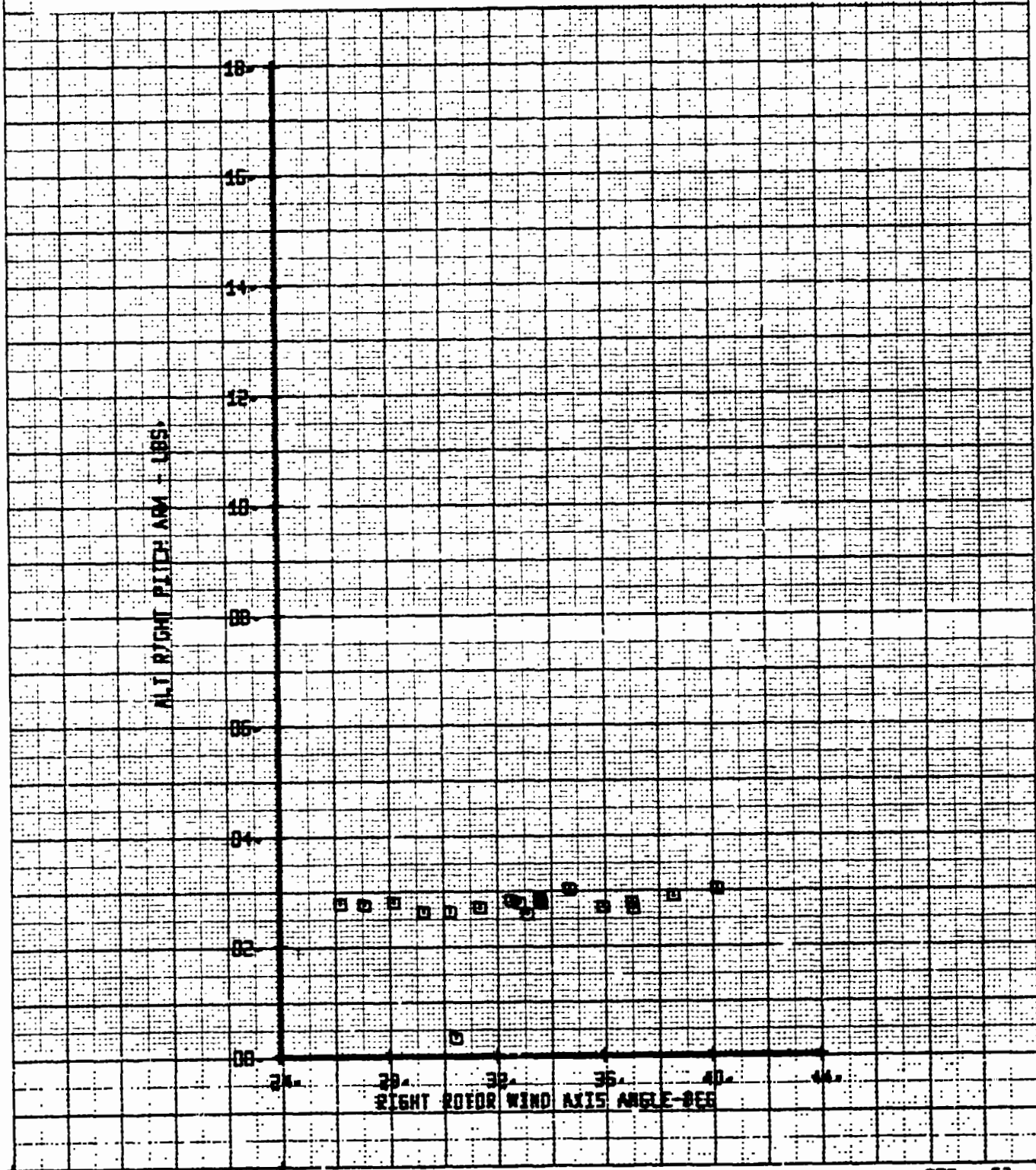


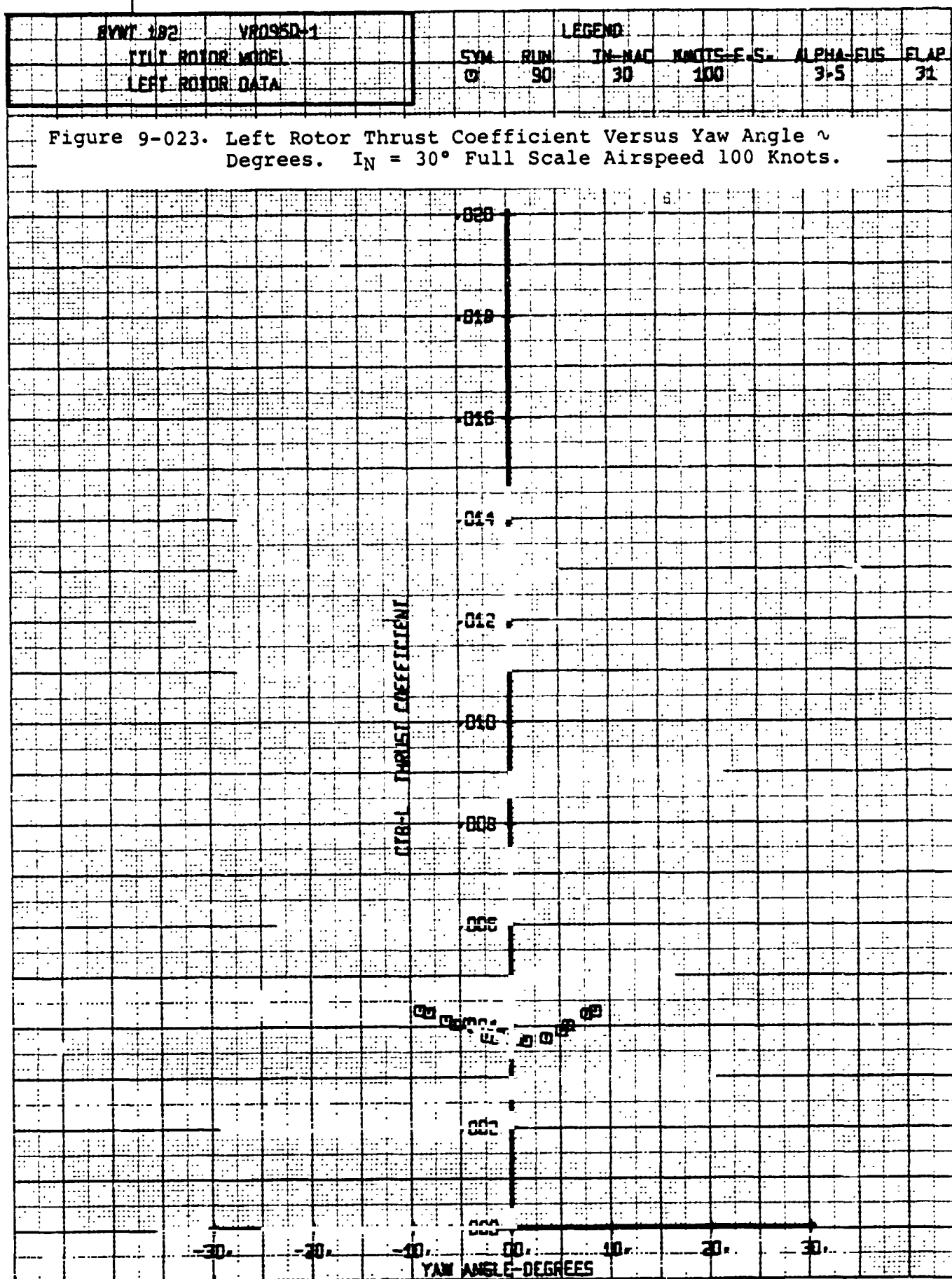


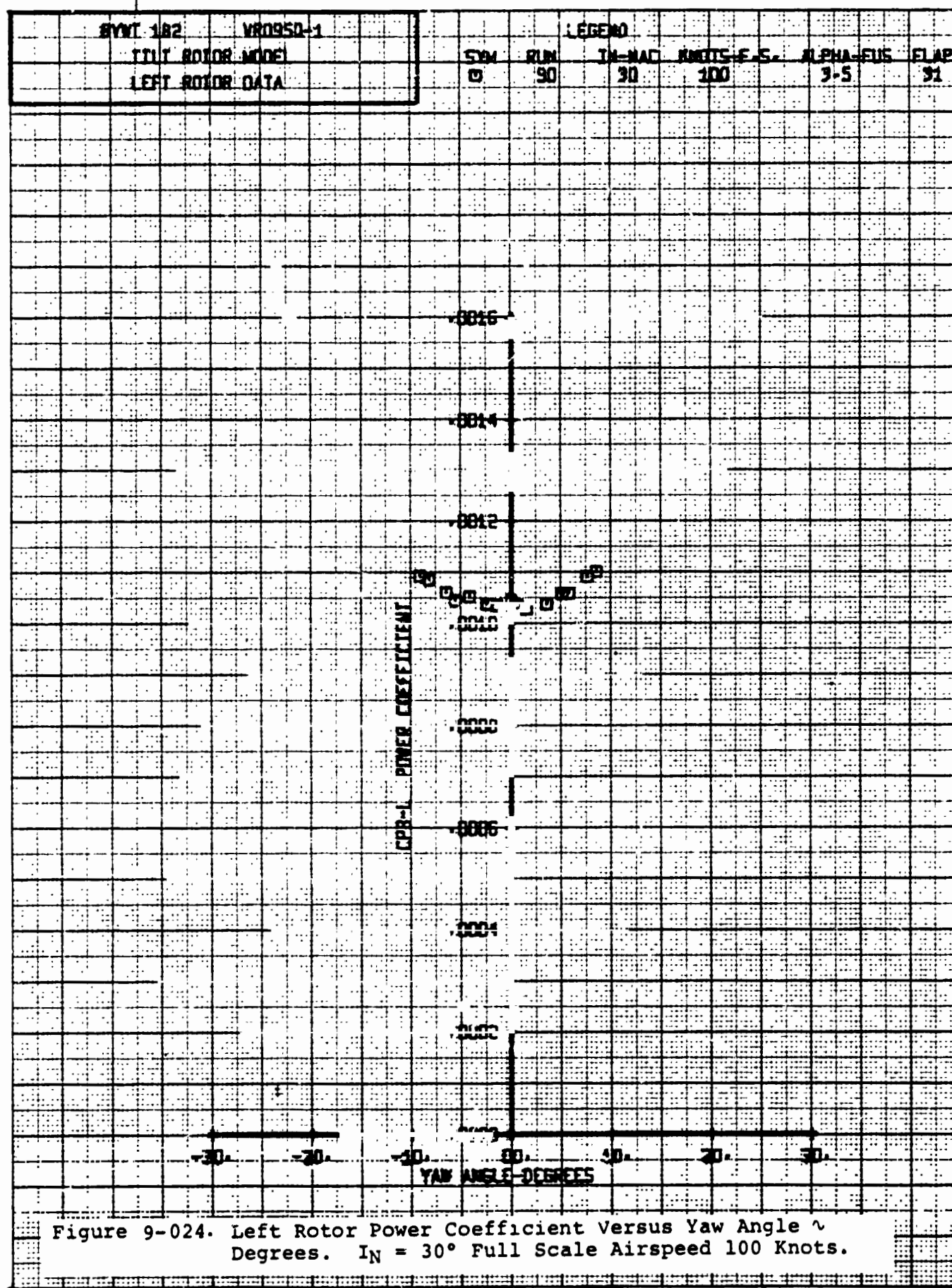


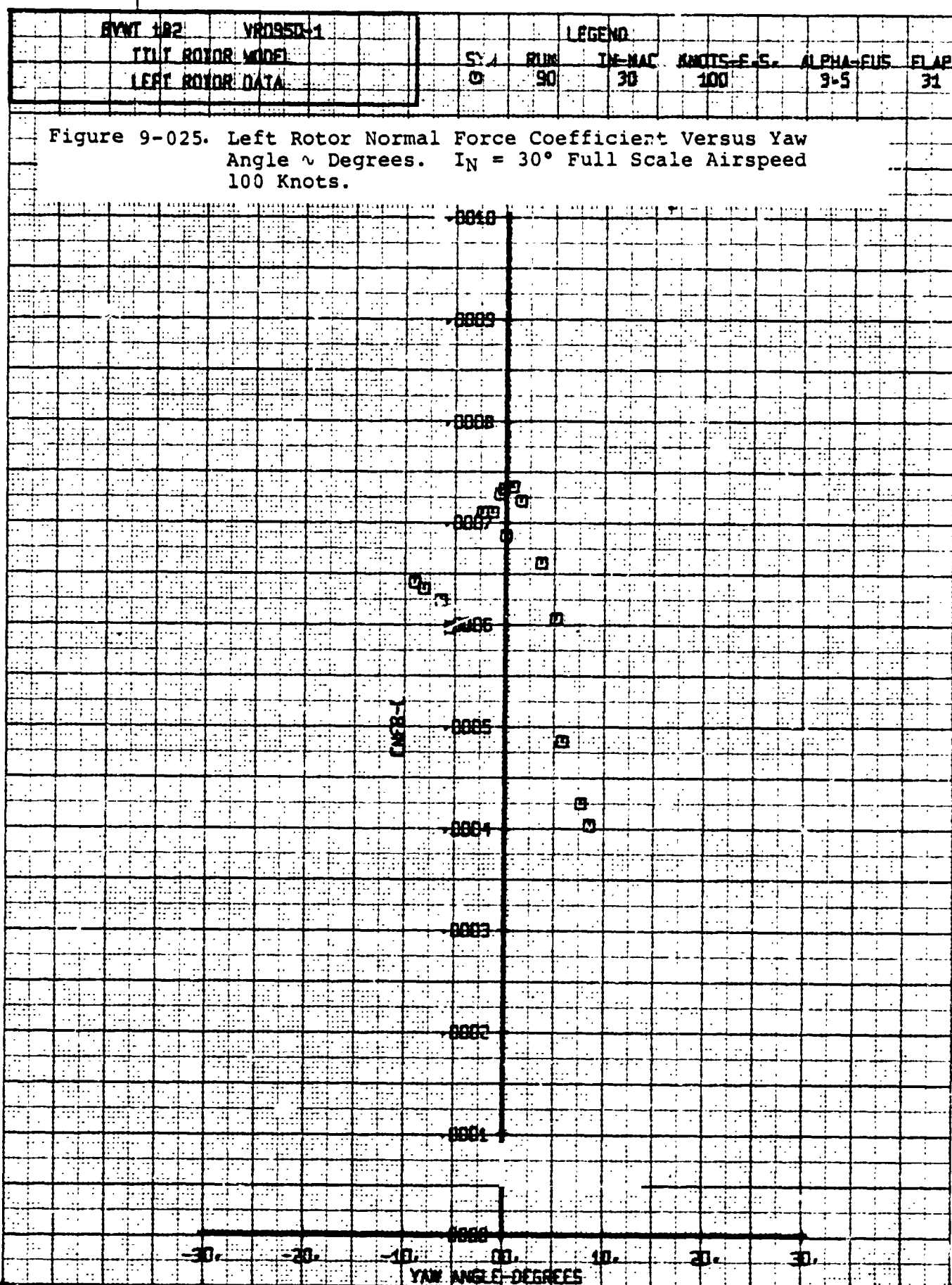
| | | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|------|
| BVWT 182 | VR0950-1 | LEGEND | | | | | |
| TAIL ROTOR MODEL | | SYM | RUN | IN-MAC | KNOTS-F.S. | ALPHA-FUS | FLAP |
| RIGHT ROTOR DATA | | 0 | 09 | 30 | 100 | VARY | 31 |

Figure 9-022. Alt. Right Pitch Link Load Versus Rotor Angle of Attack. $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.









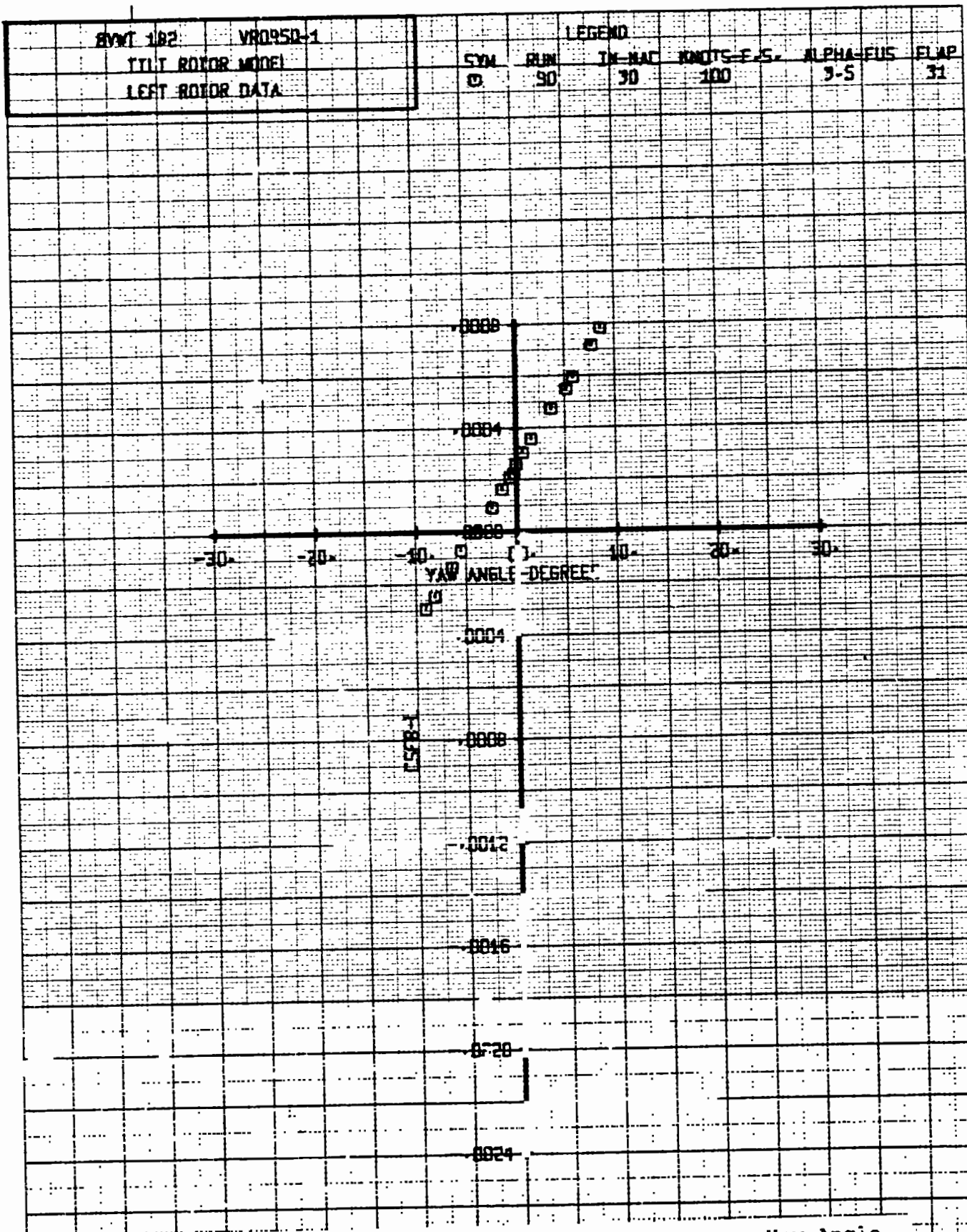


Figure 9-026. Left Rotor Side Force Coefficient Versus Yaw Angle
 γ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.

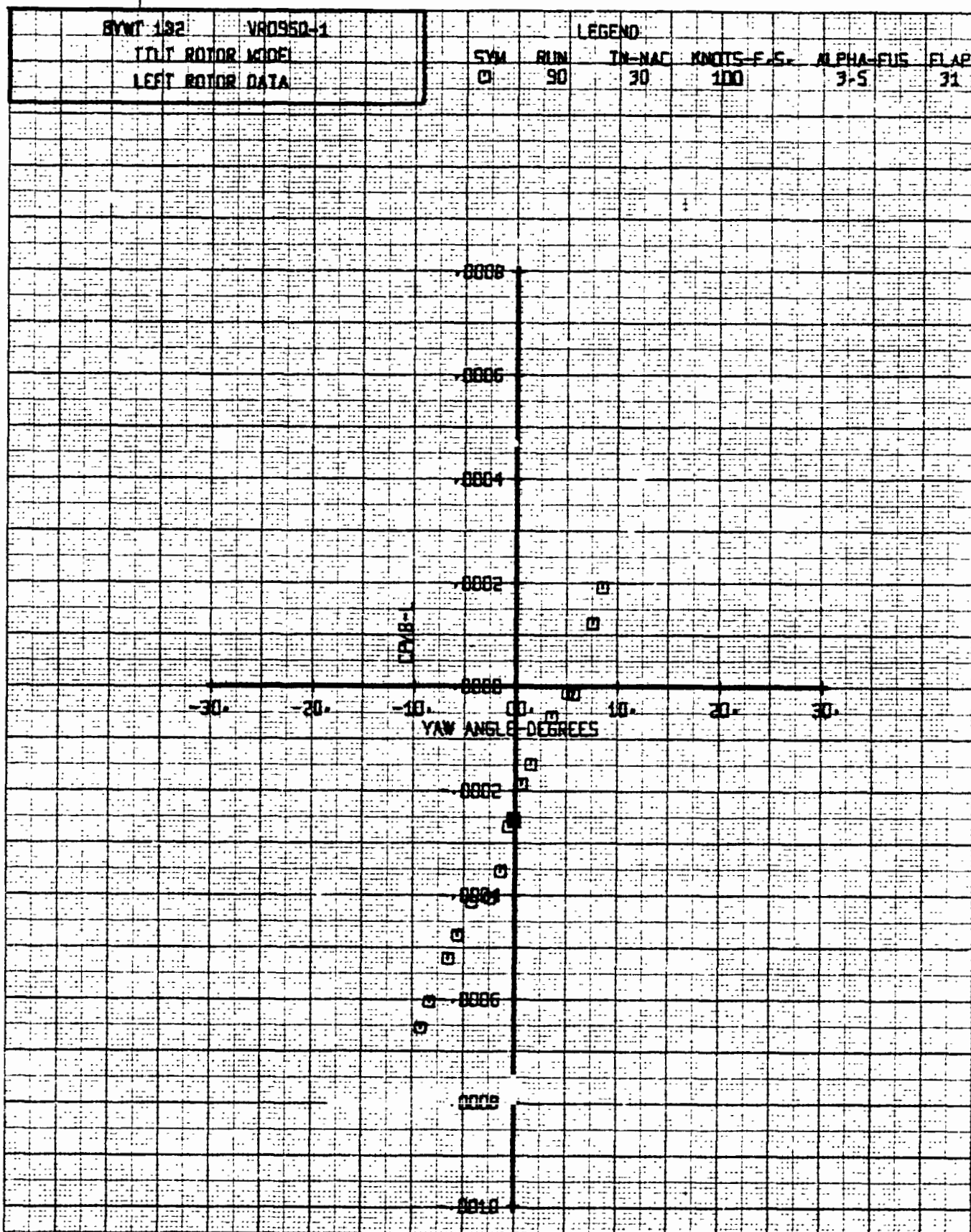


Figure 9-027. Left Rotor Pitching Moment Versus Yaw Angle ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.

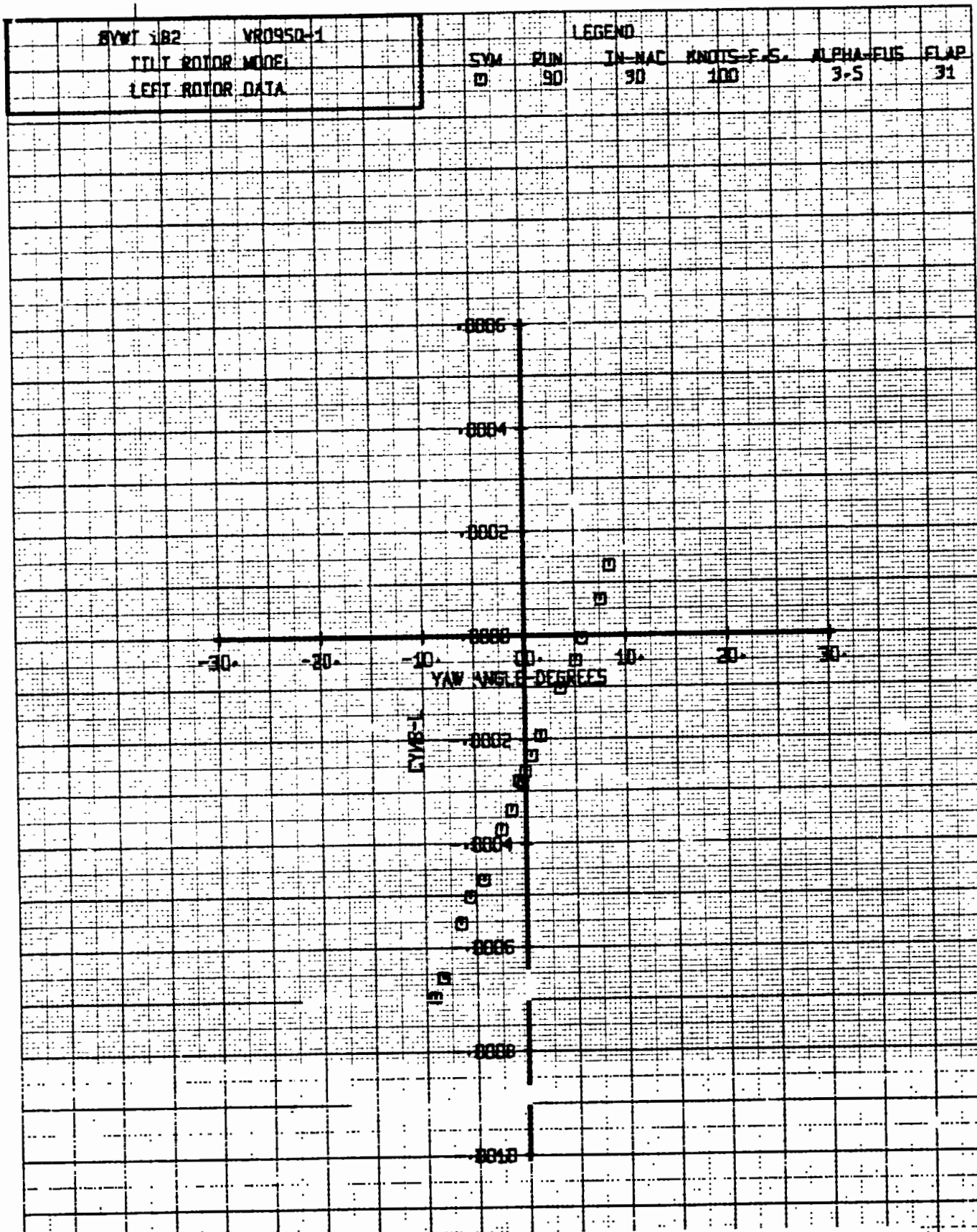
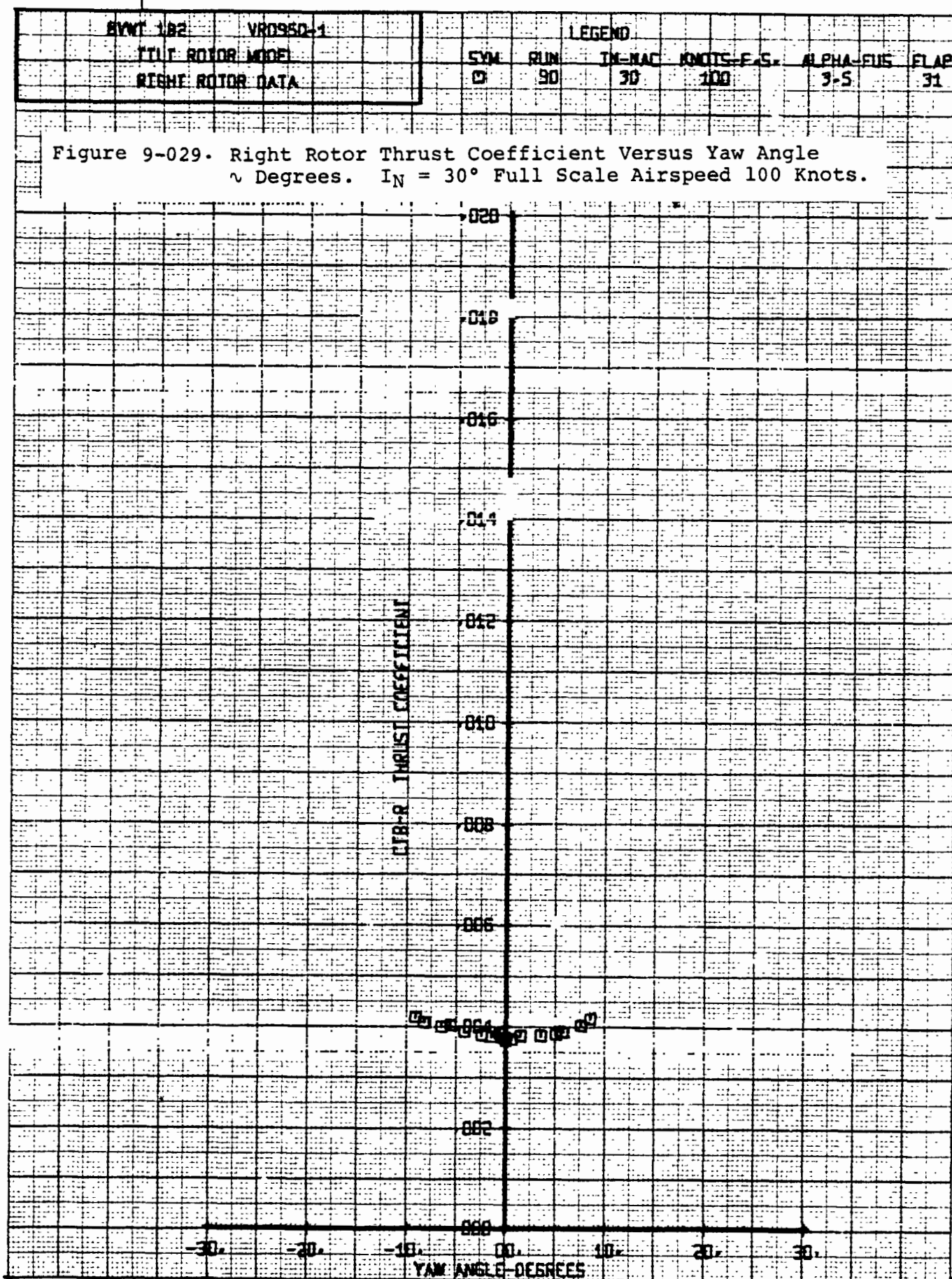
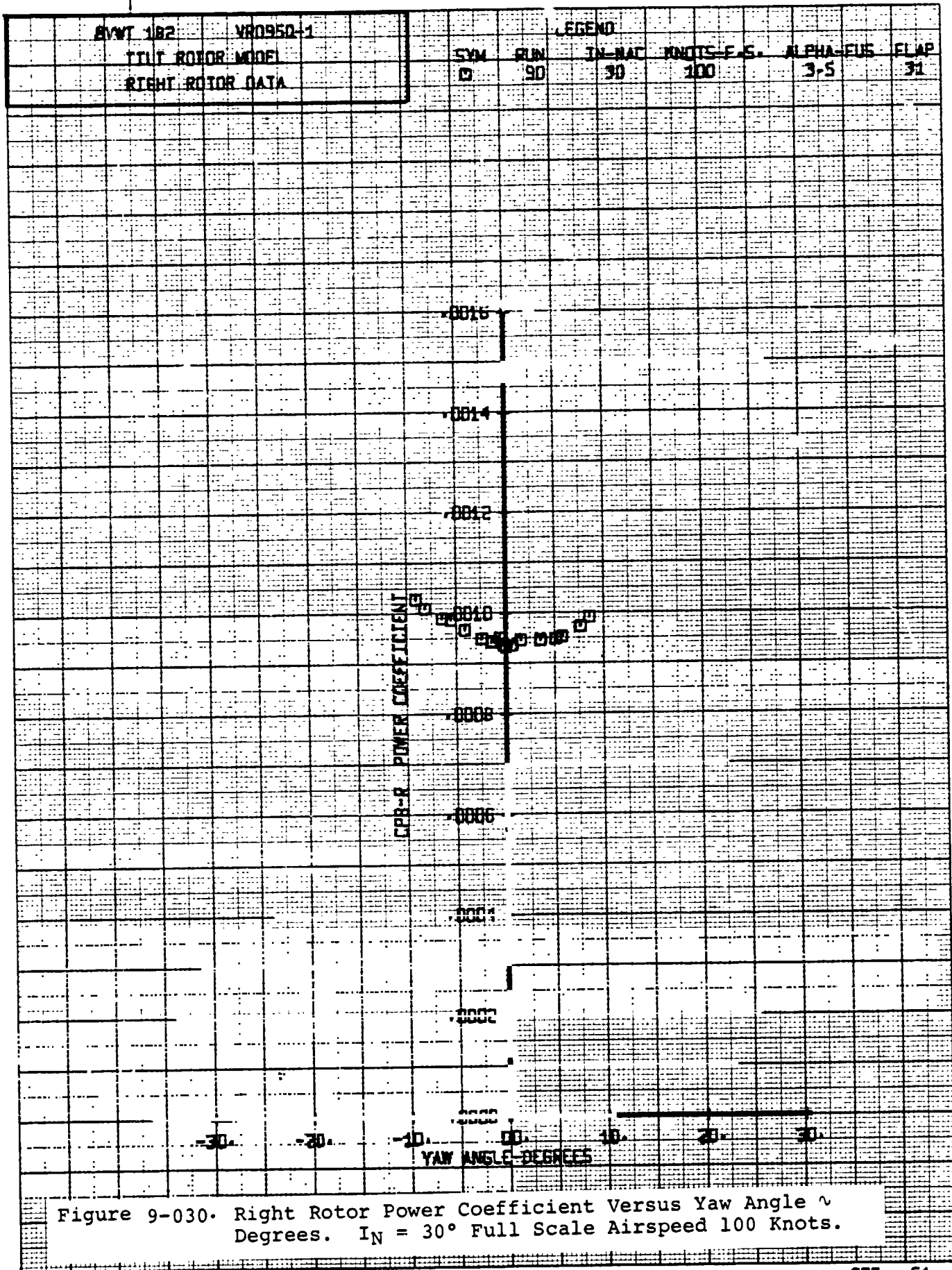


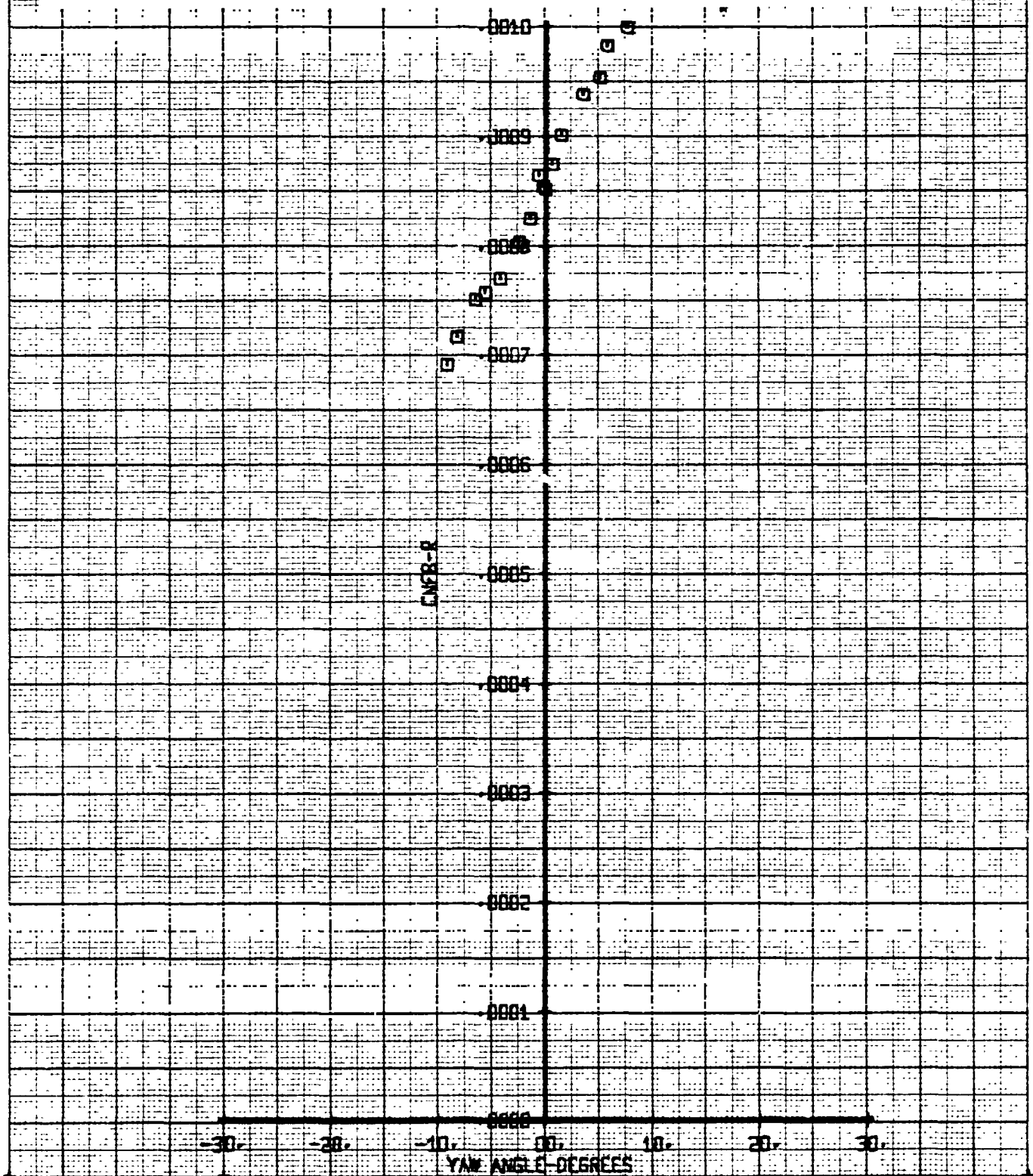
Figure 9-028. Left Rotor Yawing Moment Versus Yaw Angle ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.





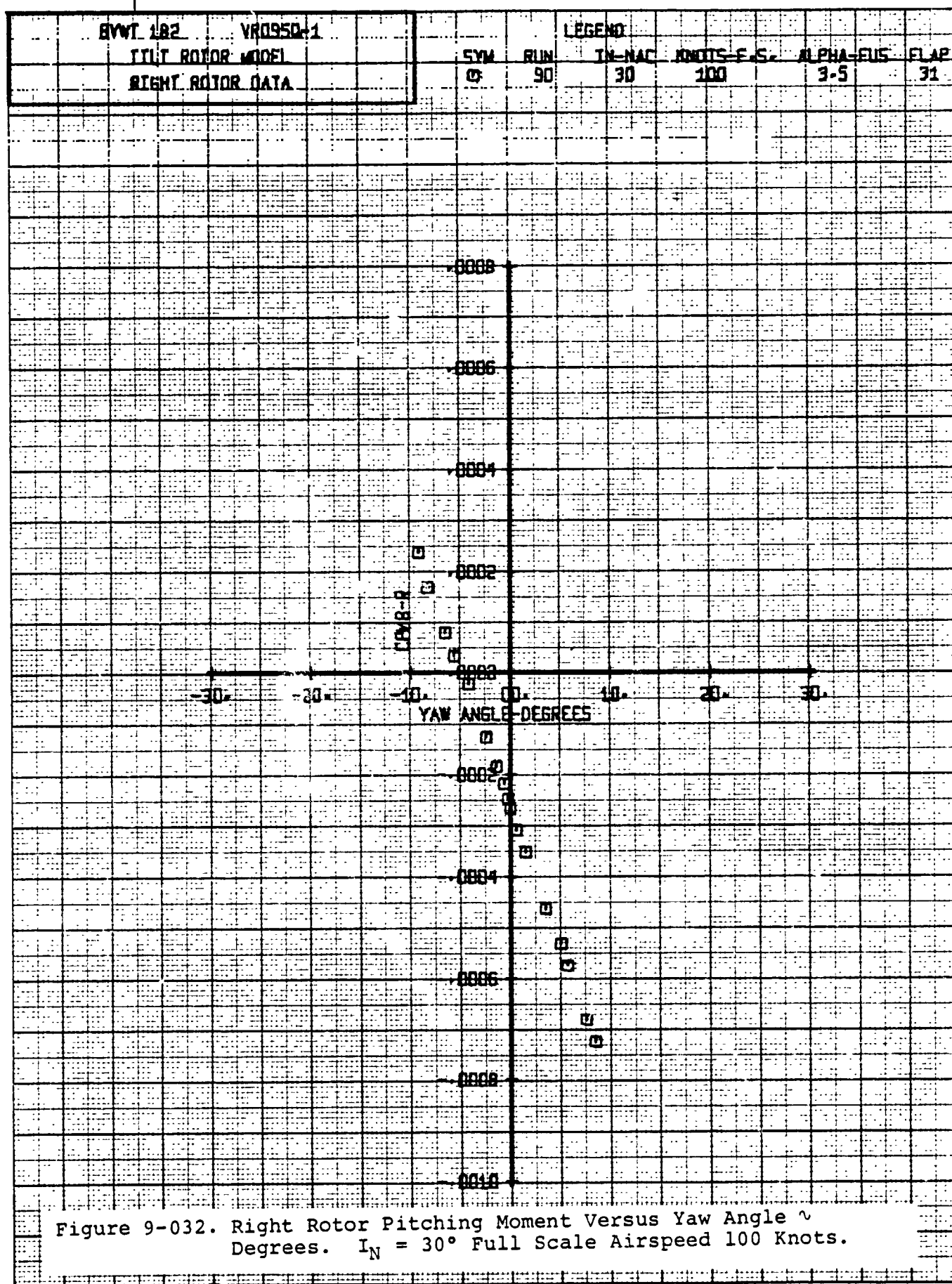
| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BYWT 182 | VR0950-1 | LEGEND | | | | |
| TILT ROTOR - 30° | | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FUS |
| RIGHT ROTOR DATA | | 0 | 90 | 30 | 100 | 3-5 |
| | | | | | | FLAP 31 |

Figure 9-031. Right Rotor Normal Force Coefficient Versus Yaw Angle γ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.



D238-10000-3

Data Deleted
Refer to Section 3.0



D238-10000-3

Data Deleted
Refer to Section 3.0

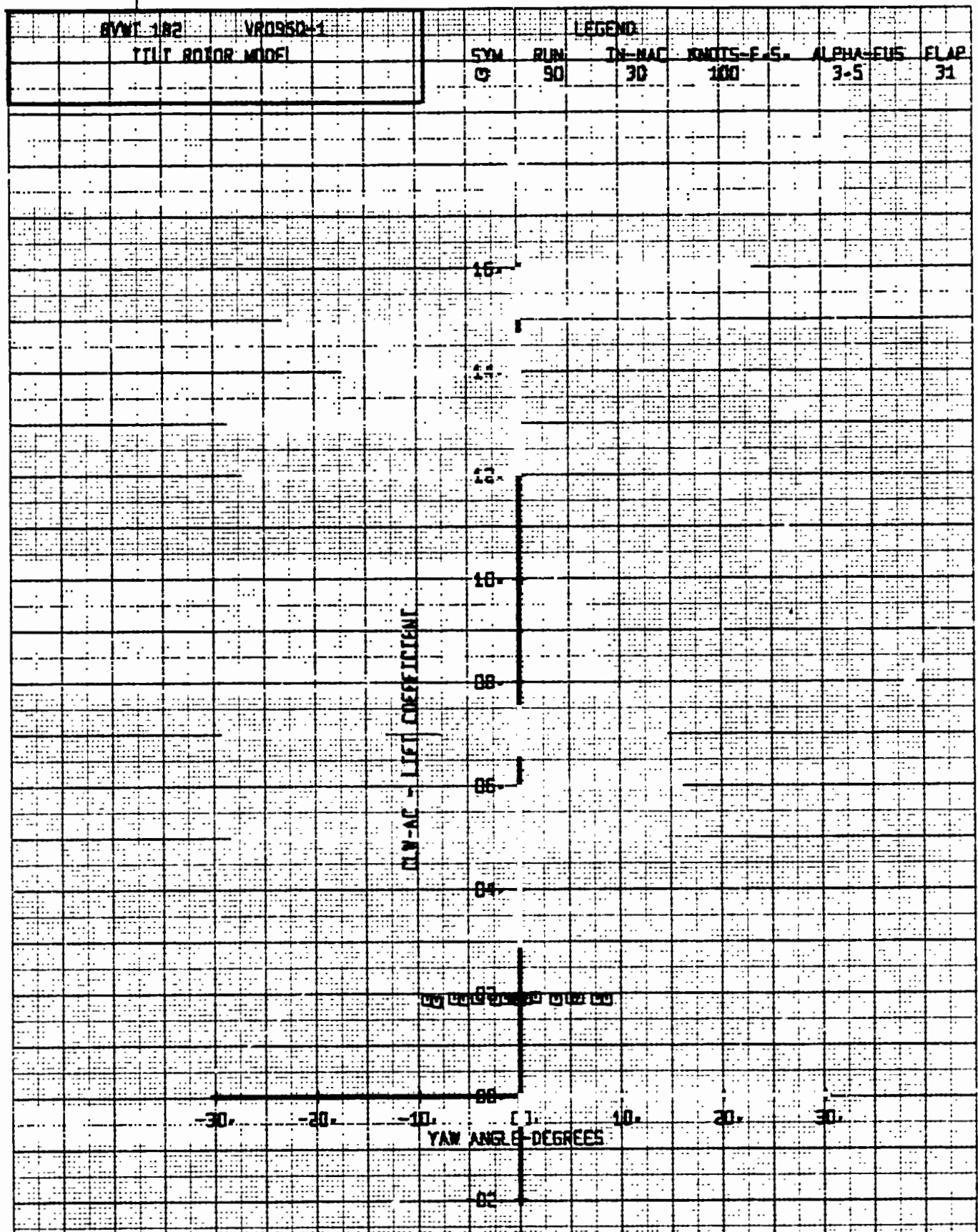
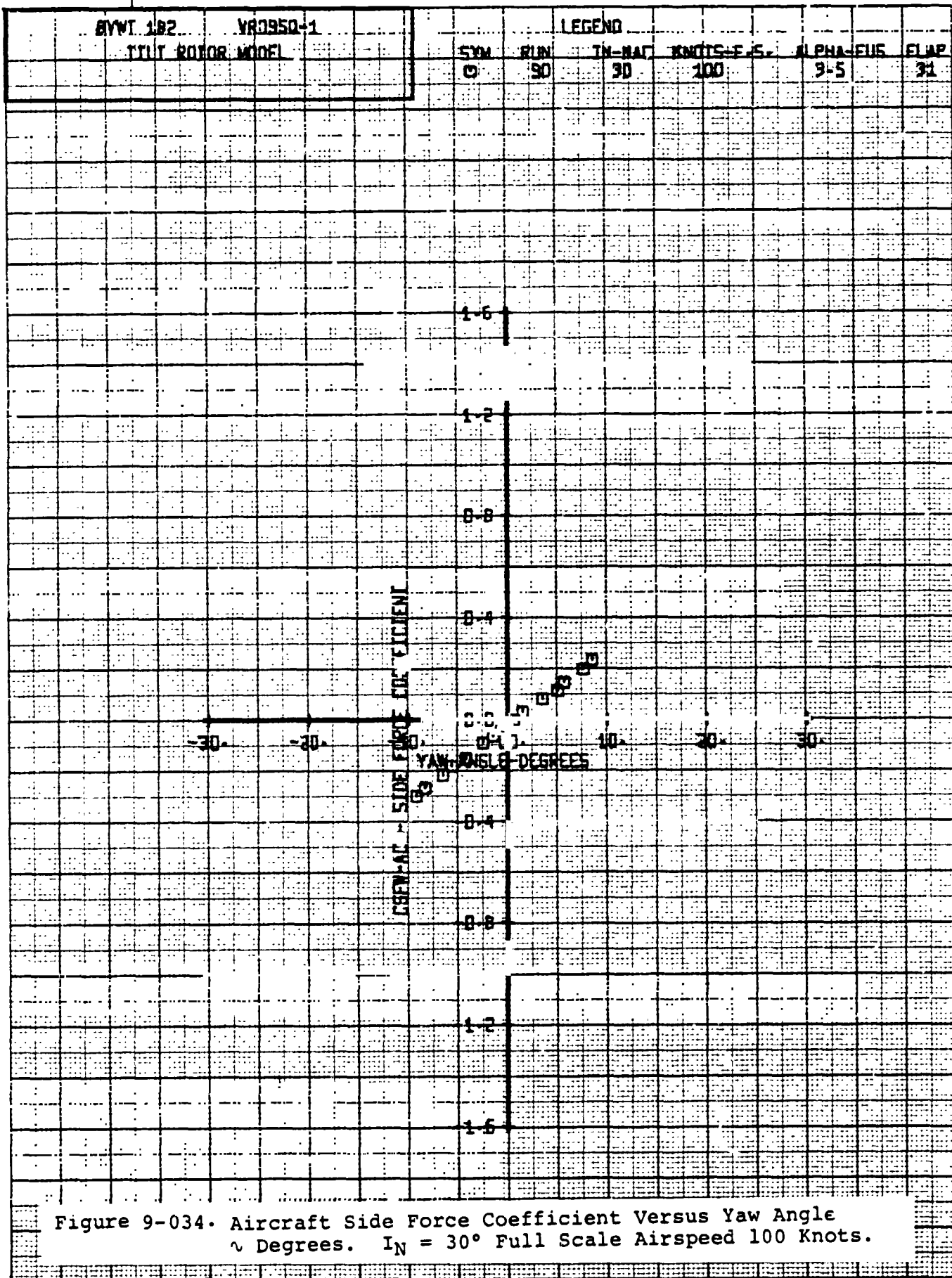
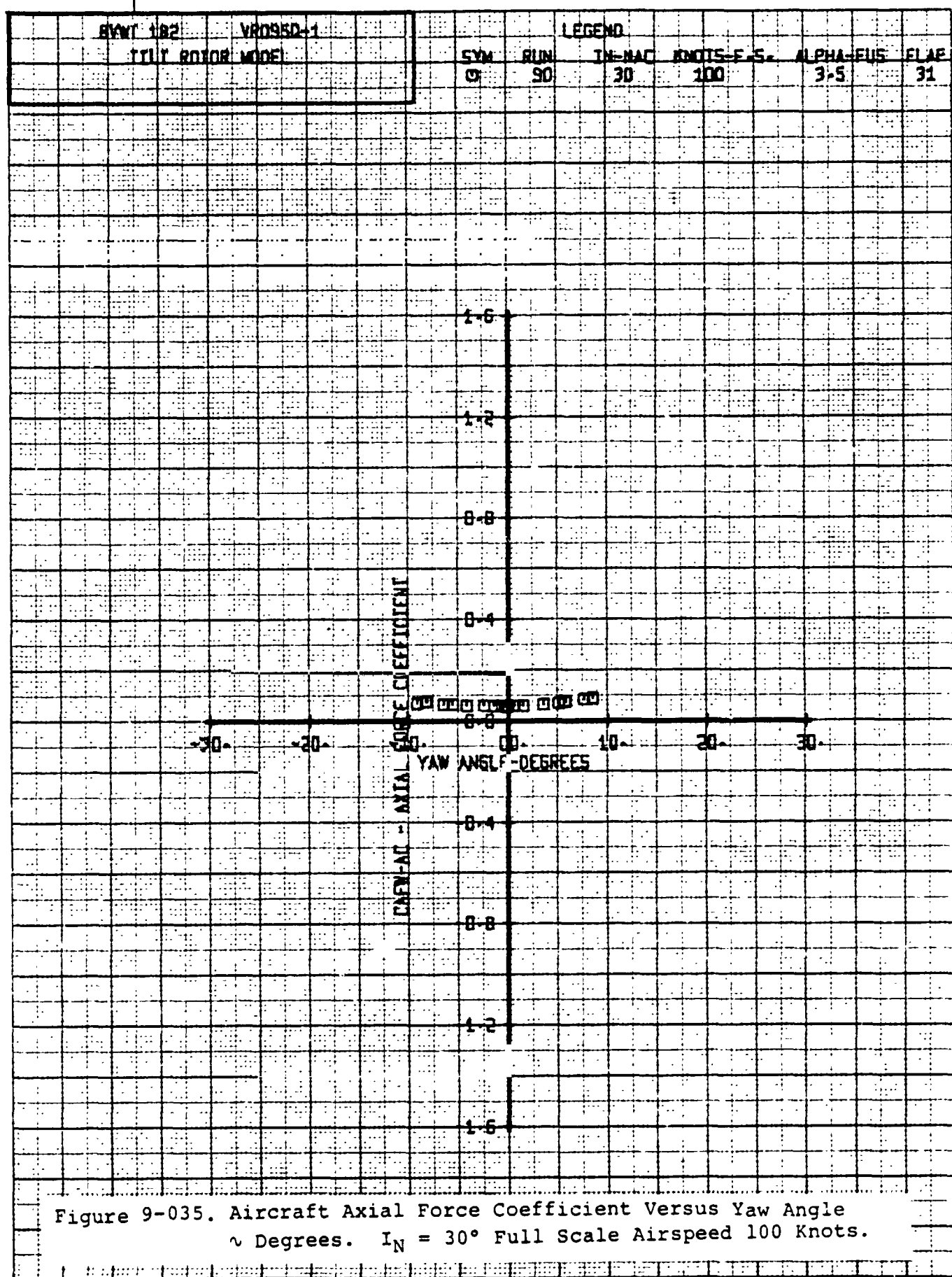
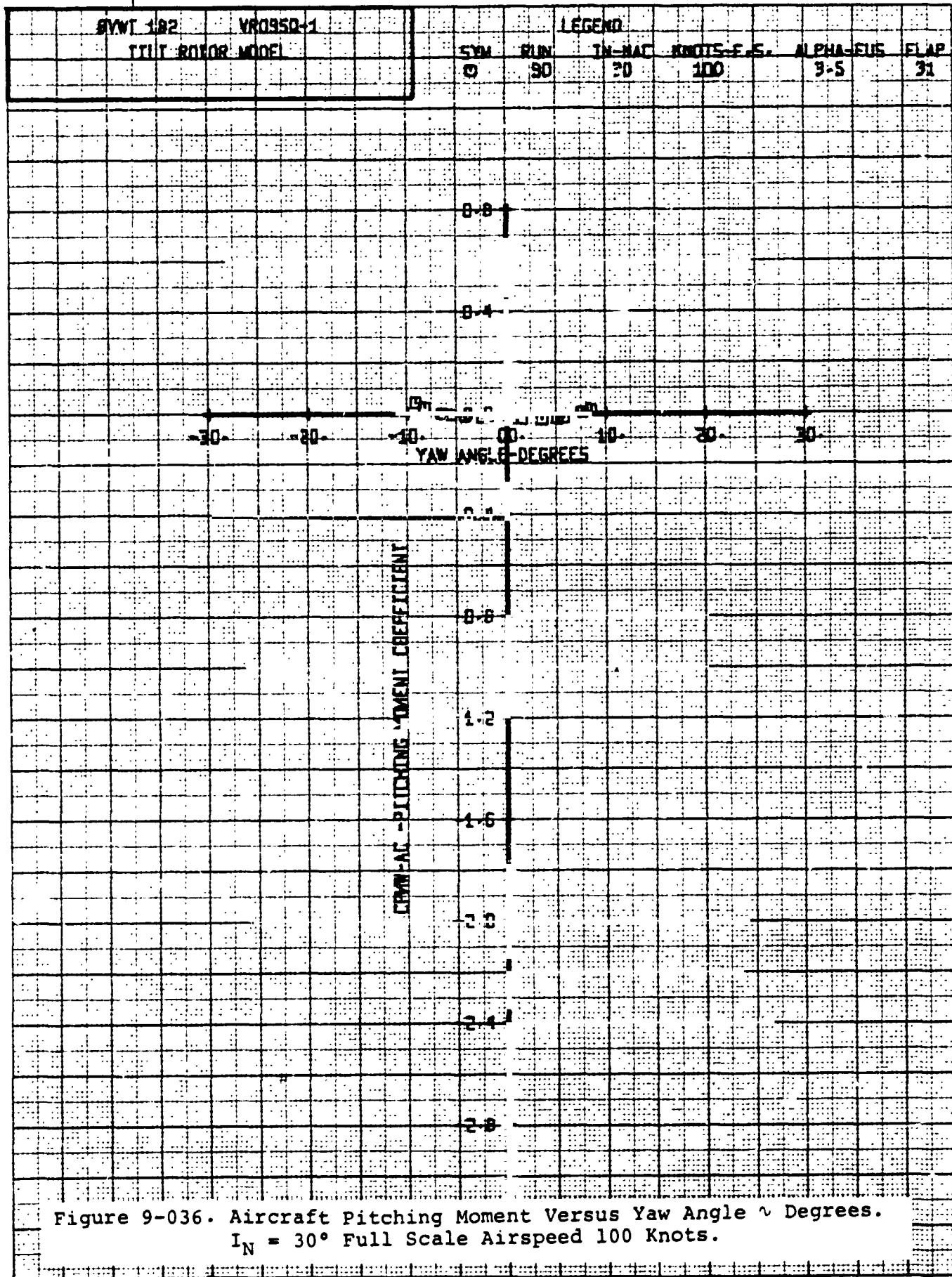
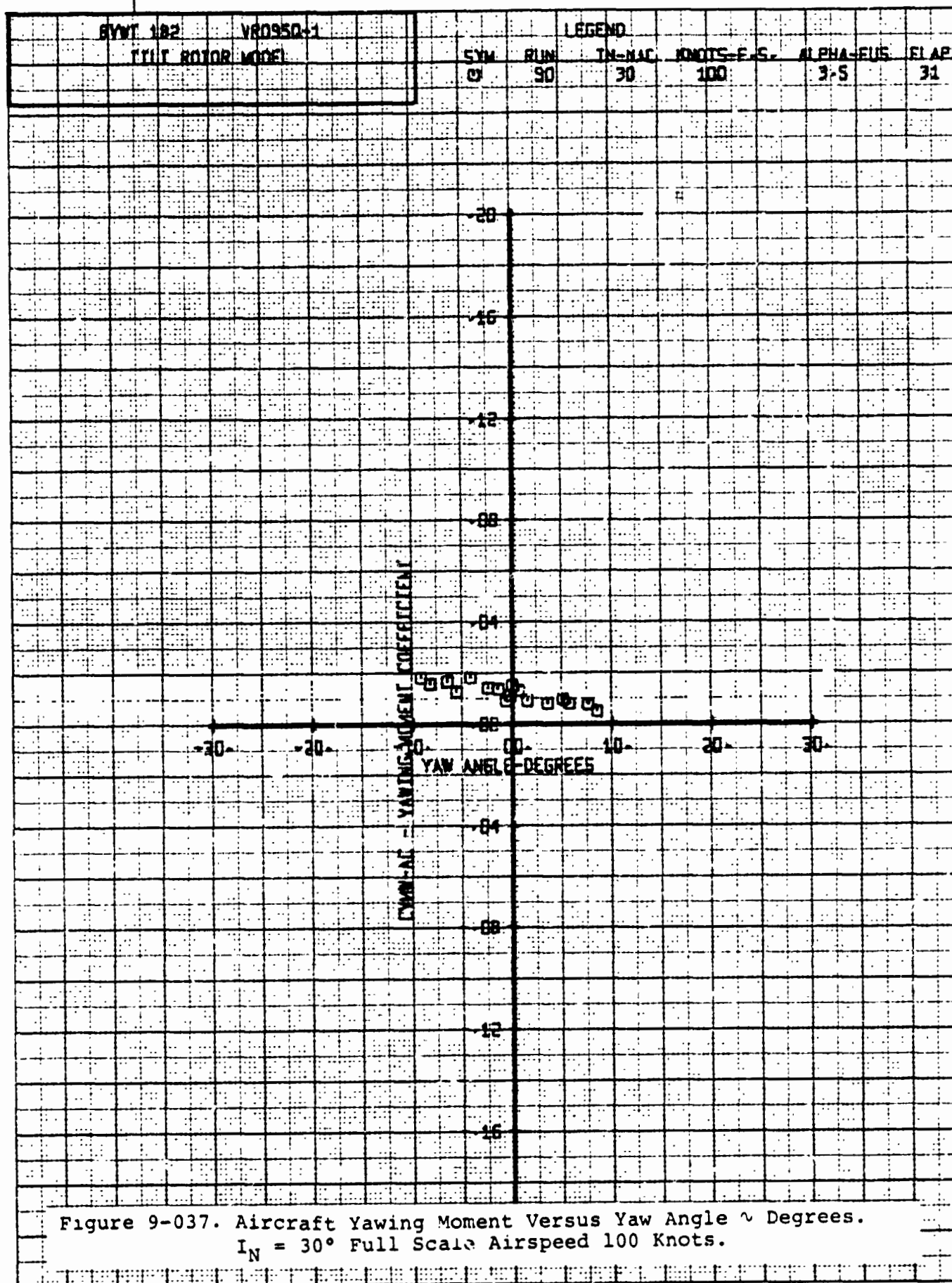


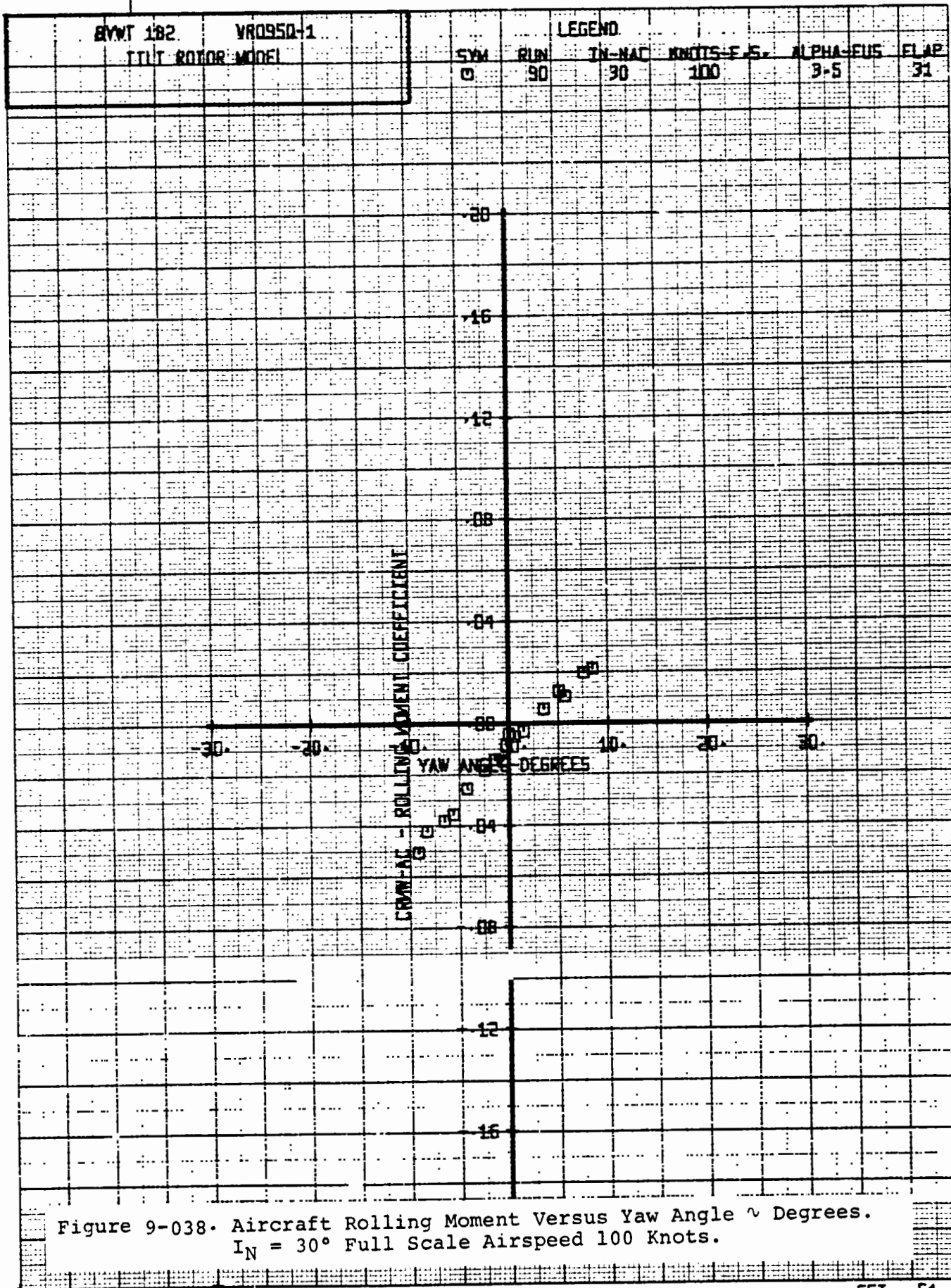
Figure 9-033. Aircraft Lift Coefficient Versus Yaw Angle γ Degrees.
 $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.











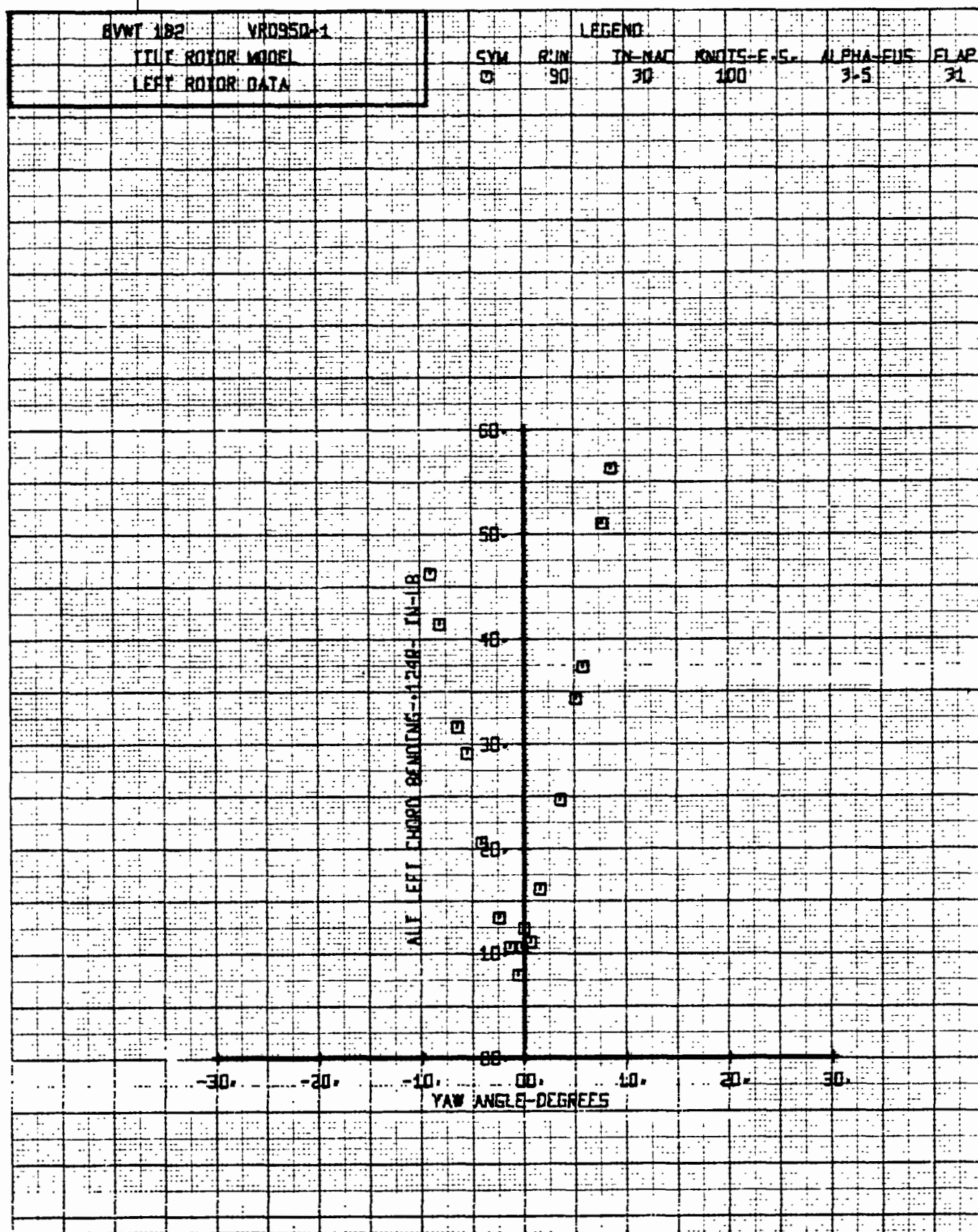
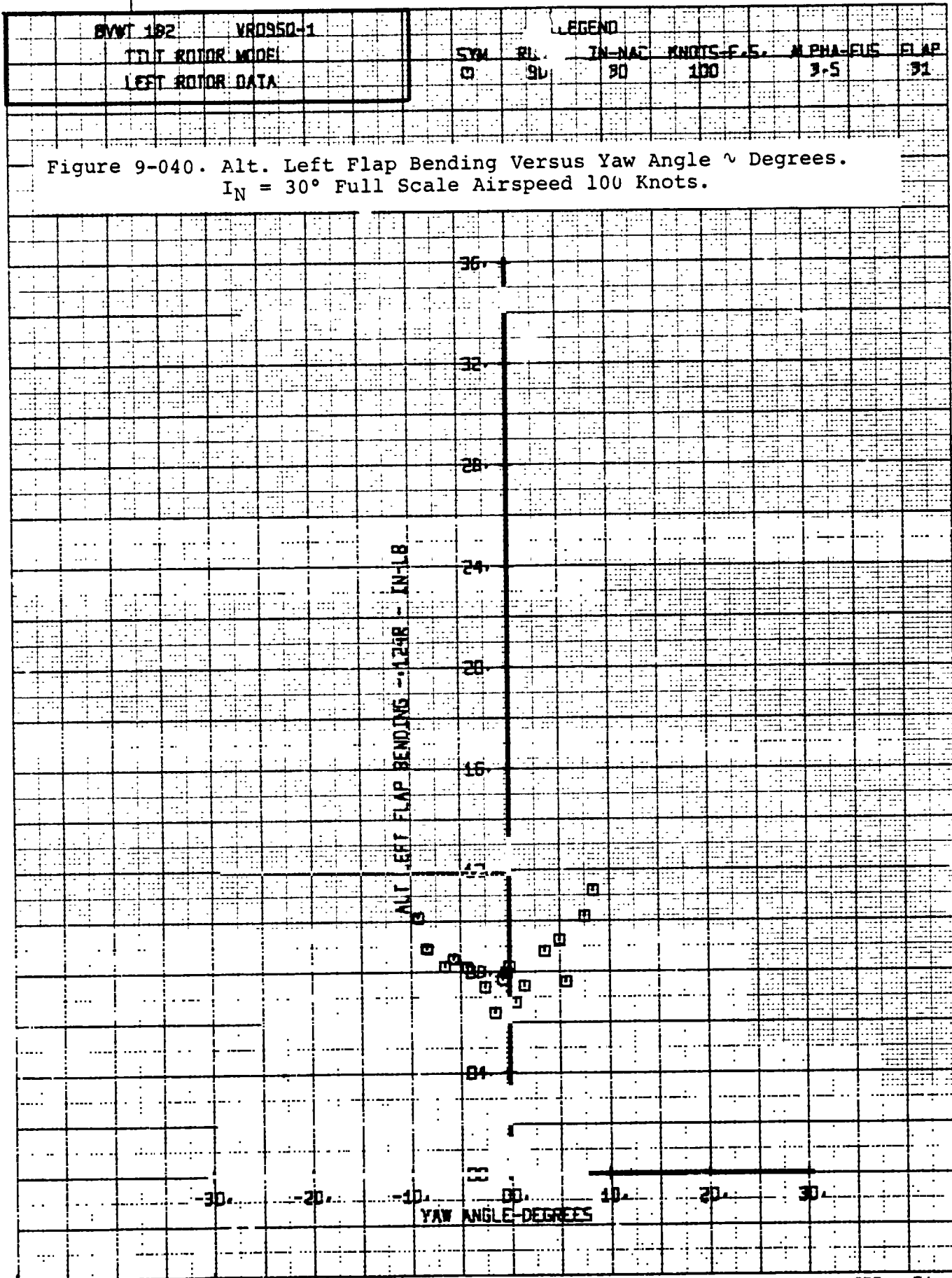


Figure 9-039. Alt. Left Chord Bending Versus Yaw Angle ~ Degrees.
 $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.



BVWT 182 VMD950-1

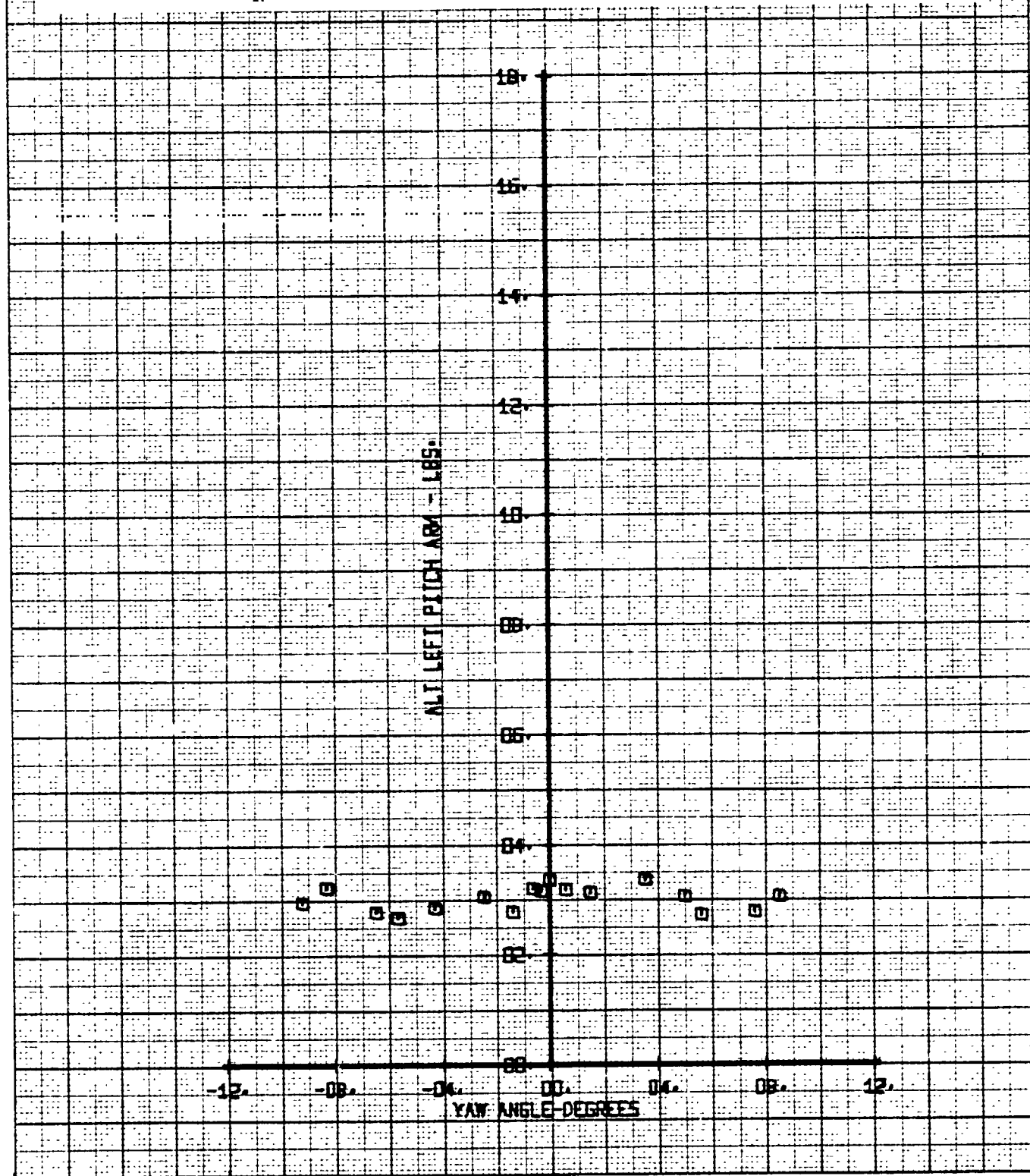
LEFT ROTOR MODEL

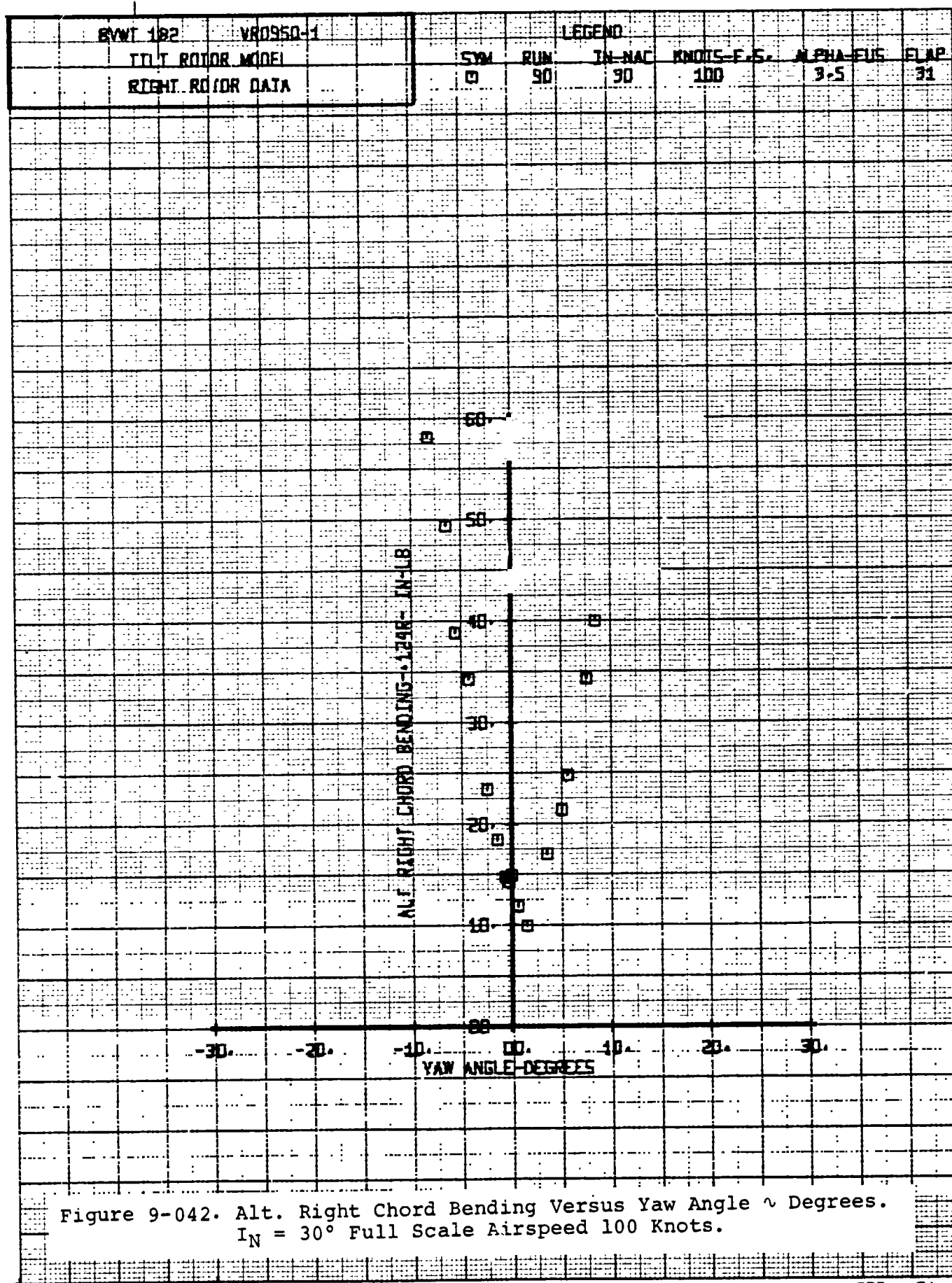
LEFT ROTOR DATA

LEGEND

| SYM | RUN | IN-NAC | KNOTS-F.F. | ALPHA-FUS | FLAP |
|-----|-----|--------|------------|-----------|------|
| □ | 90 | 30 | 100 | 3-5 | 31 |

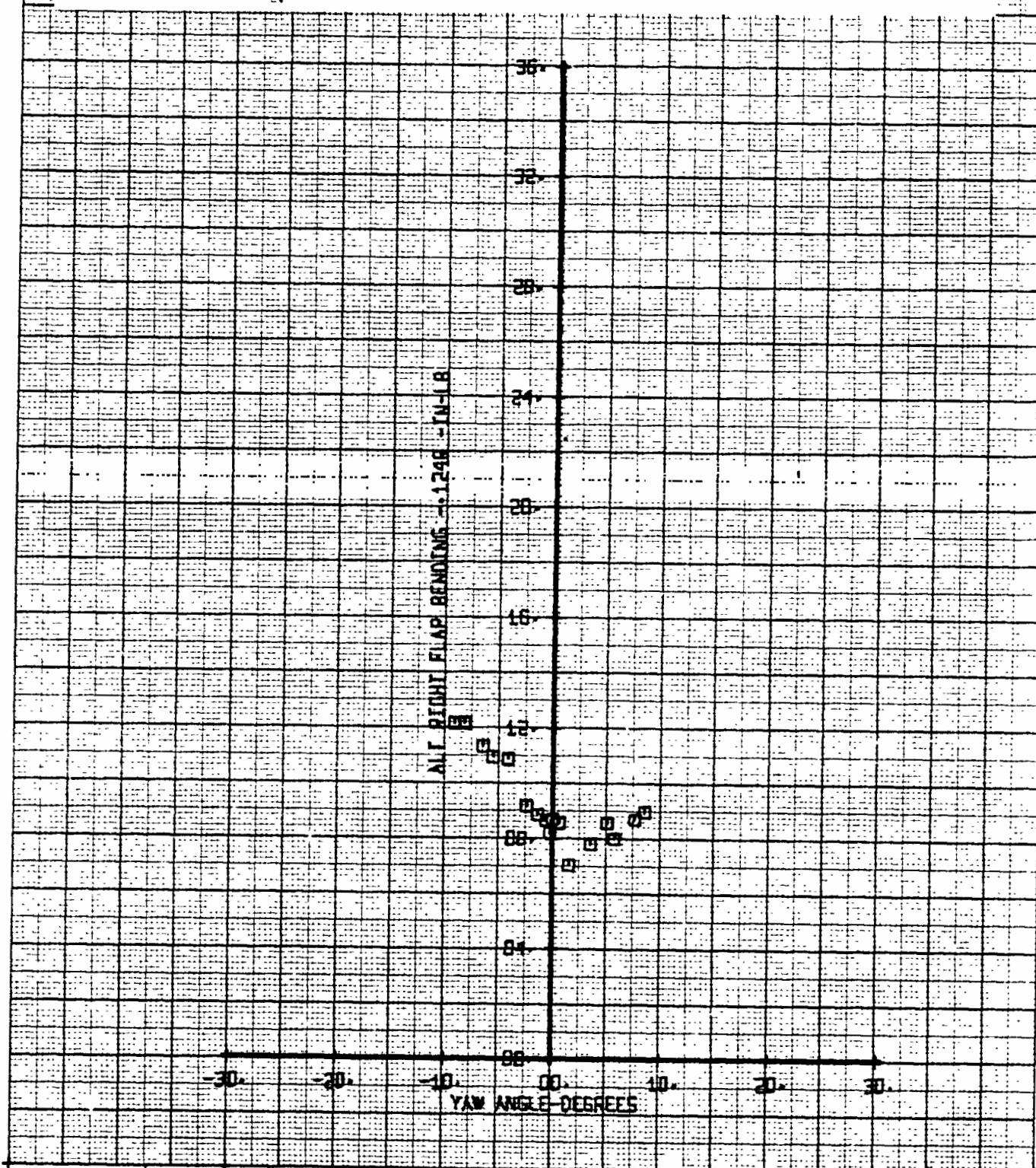
Figure 9-041. Alt. Left Pitch Link Load Versus Yaw Angle ~ Degrees.
 $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.





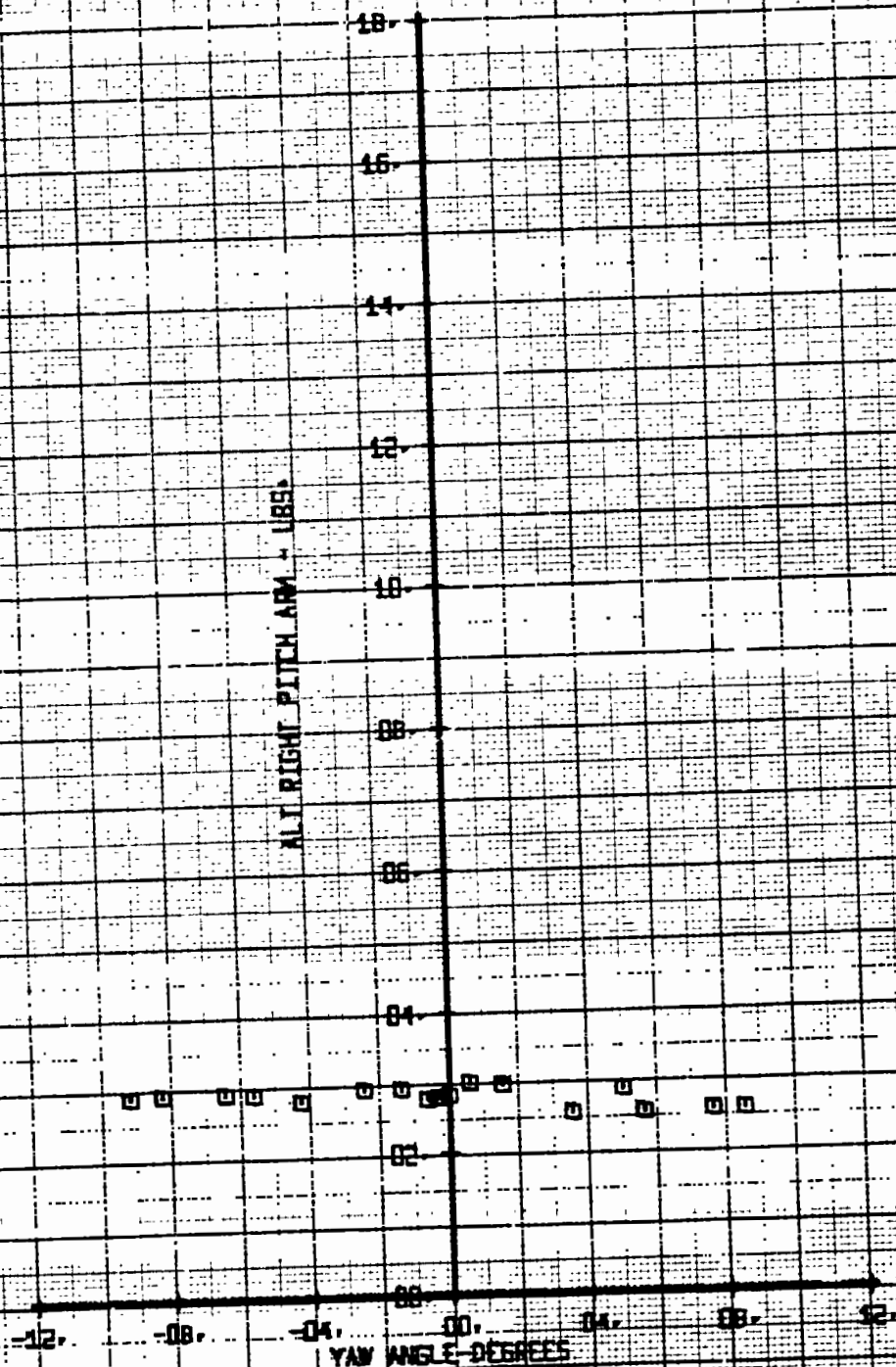
| | | | | | | | |
|------------------|--|----------|--|--------|--------|------------|-----------|
| BVWT 182 | | VROSSD-1 | | LEGEND | | | |
| TILT ROTOR MODE | | SYM | | RUN | IN-MAC | KNOTS-F.S. | ALPHA-DEG |
| RIGHT ROTOR DATA | | O | | 90 | 30 | 100 | 3-5 |
| | | | | | | | FLAP |
| | | | | | | | 31 |

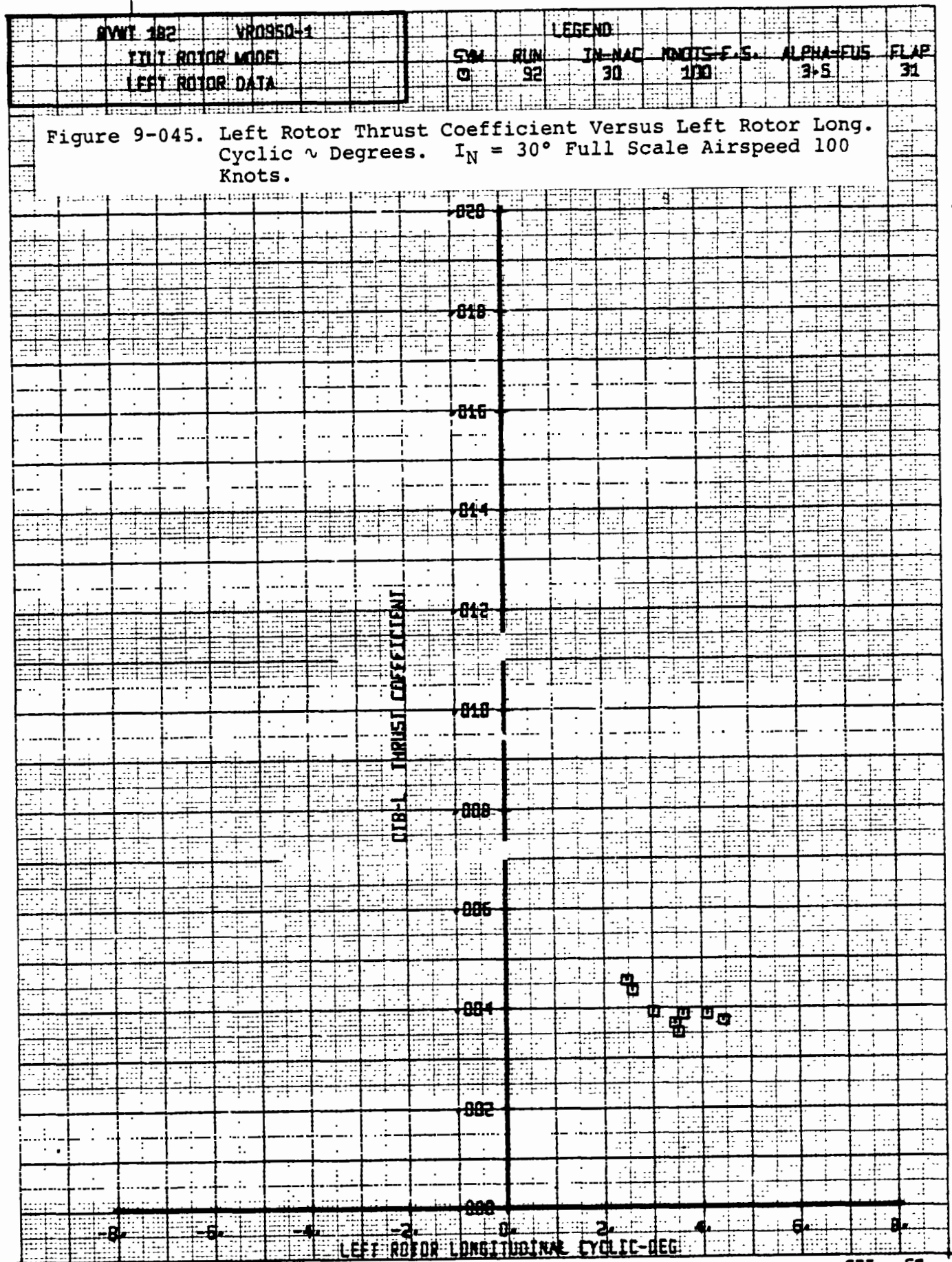
Figure 9-043. Alt. Right Flap Bending Versus Yaw Angle ψ Degrees.
 $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.



| | | | | | | |
|------------------|----------|--------|------|--------|------------|-----------|
| BWWT 1B2 | VR0950-1 | LEGEND | | | | |
| TILT ROTOR MODEL | | SYM | FLIN | IN-MAC | KNOTS-F.S. | ALPHA-FUS |
| RIGHT ROTOR DATA | | 0 | 90 | 90 | 100 | 3-5 |
| | | | | | | FLAP 31 |

Figure 9-044. Alt. Right Pitch Link Load Versus Yaw Angle ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.





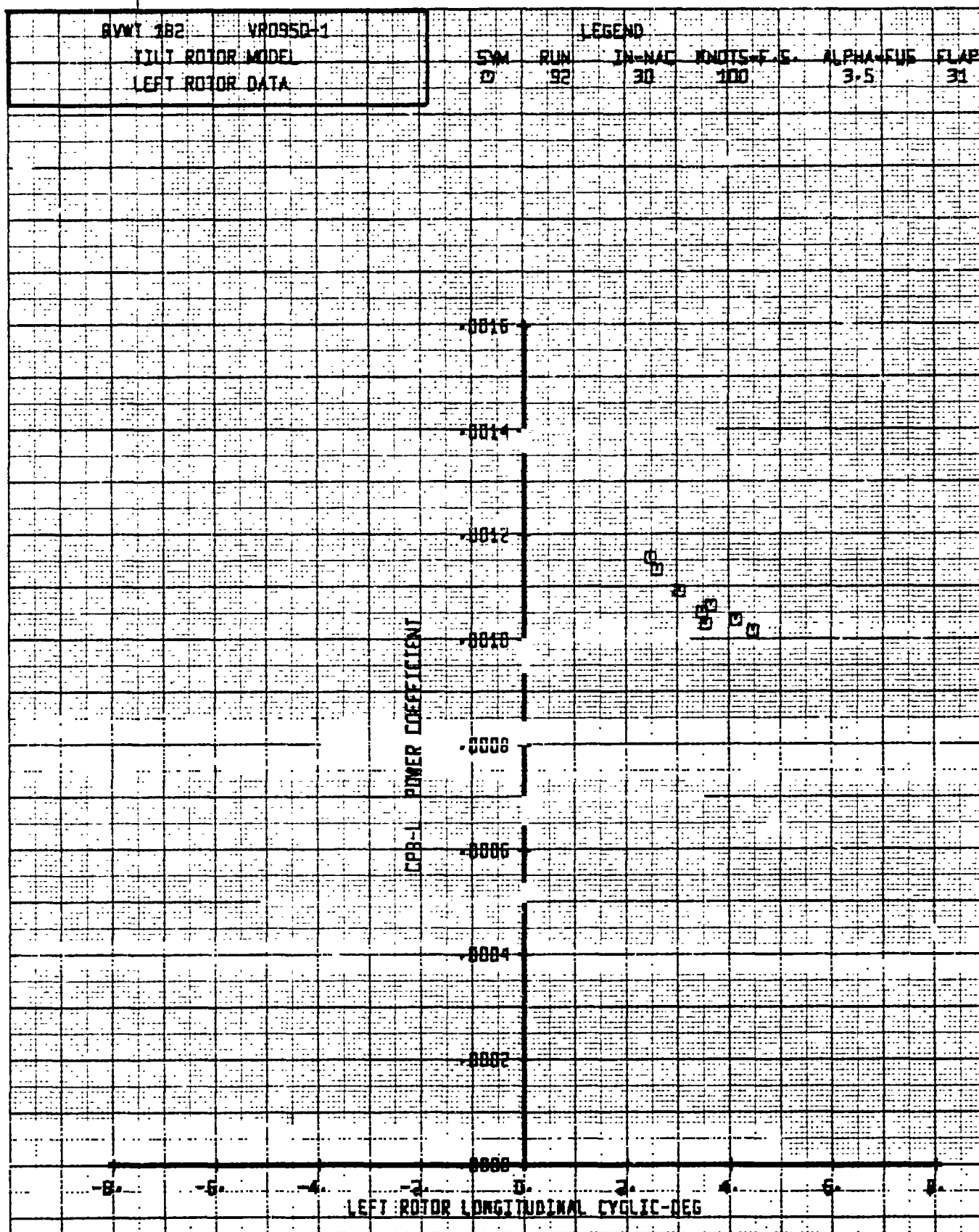
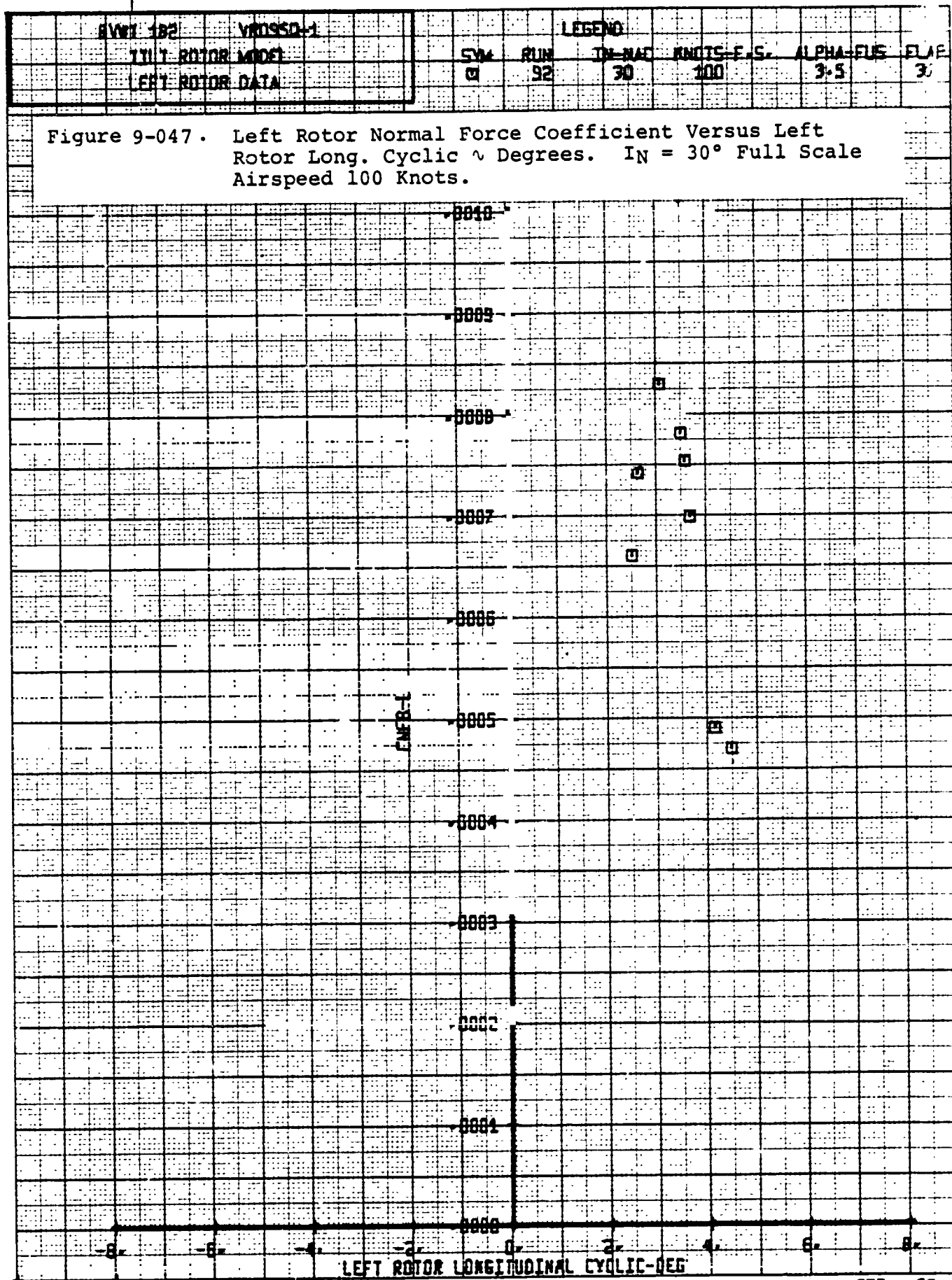


Figure 9-046. Left Rotor Power Coefficient Versus Left Rotor Long. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.



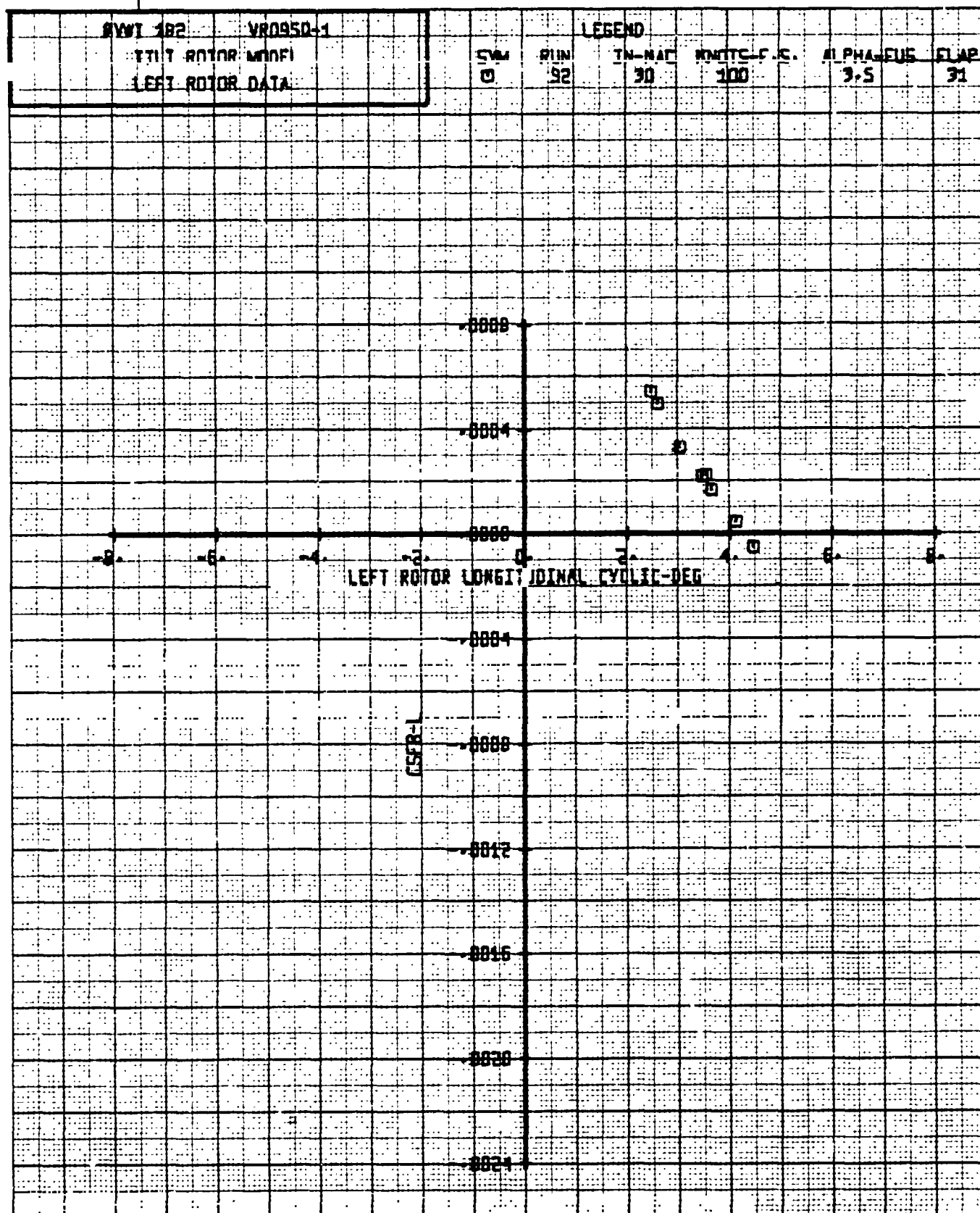


Figure 9-048. Left Rotor Side Force Coefficient Versus Left Rotor Long. Cyclic ~ Degrees. IN = 30° Full Scale
Airspeed 100 Knots.

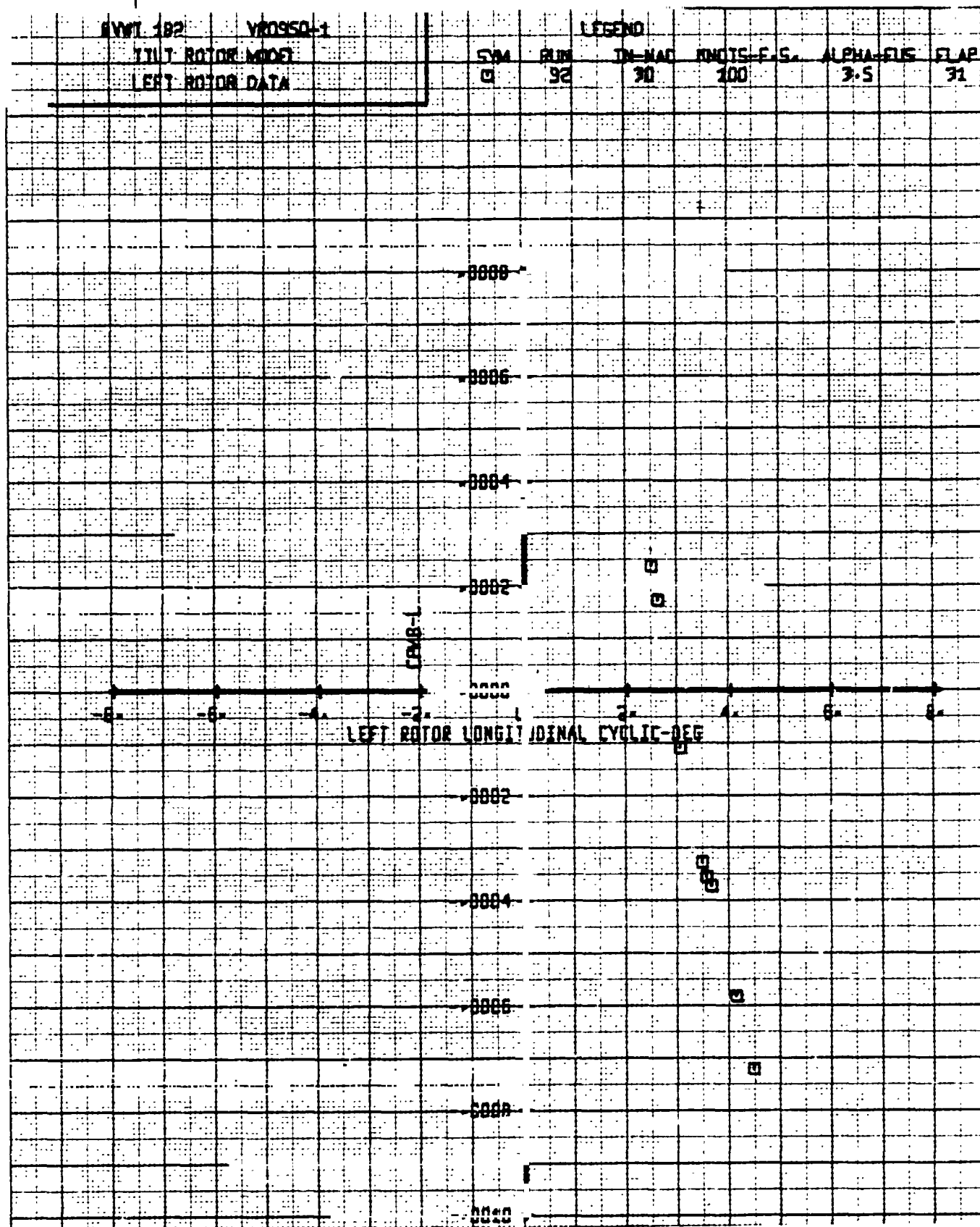


Figure 9-0.9. Left Rotor Pitching Moment Versus Left Rotor Long. Cyclic ~ Degrees. IN = 30° Full Scale Airspeed 100 Knots.

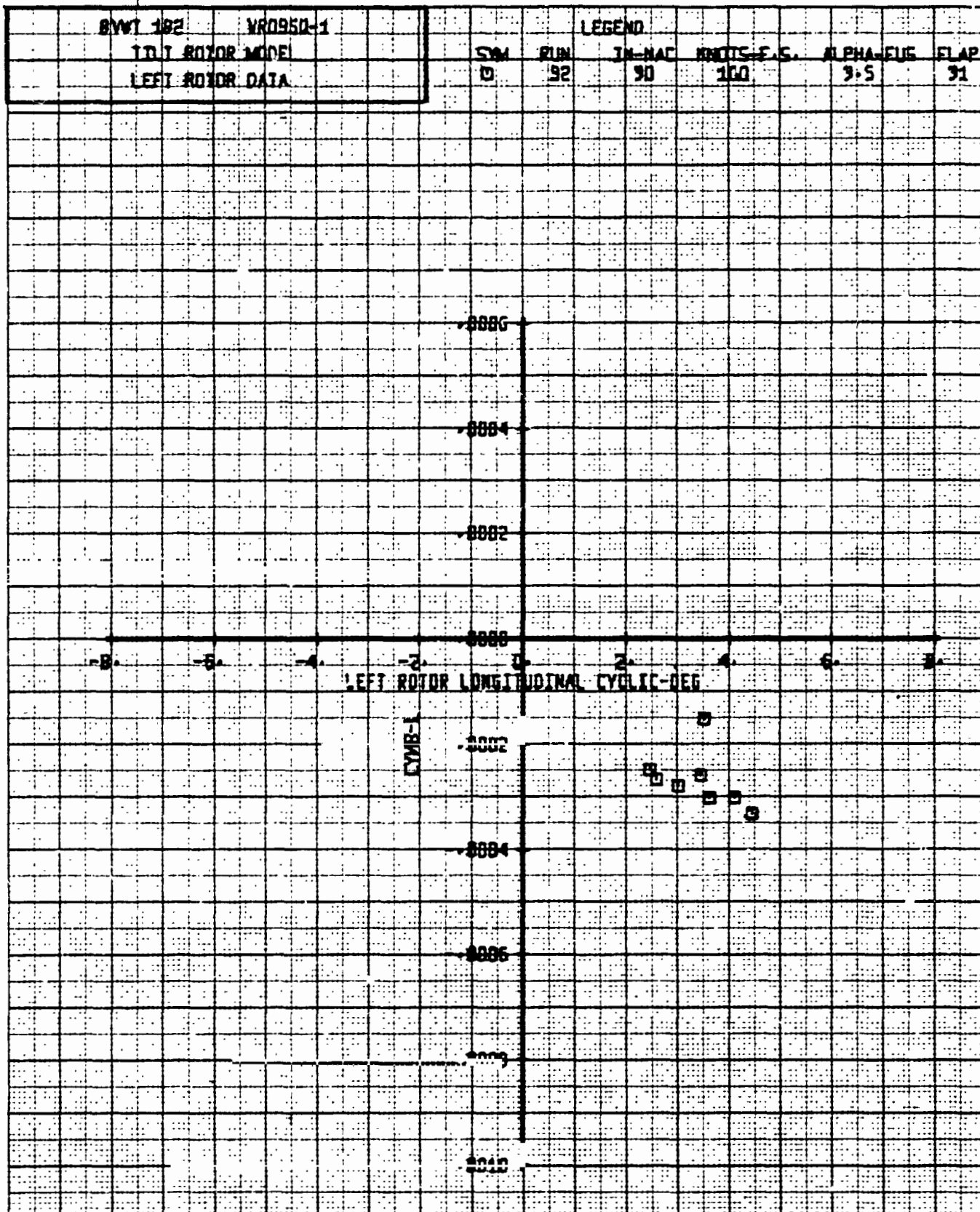
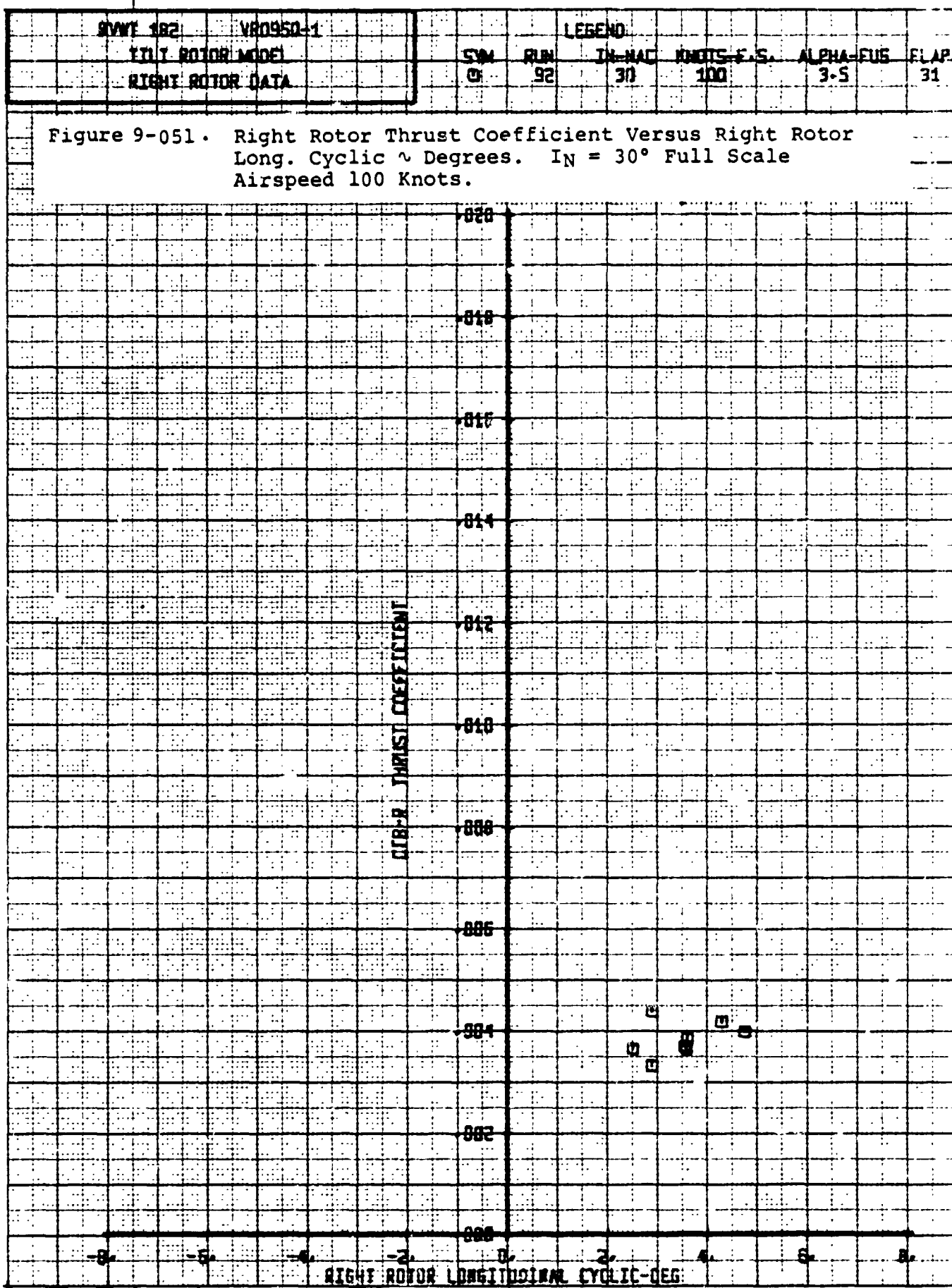


Figure 9-050. Left Rotor Yawing Moment Versus Left Rotor Long. Cyclic ~ Degrees. IN = 30° Full Scale Airspeed 100 Knots.



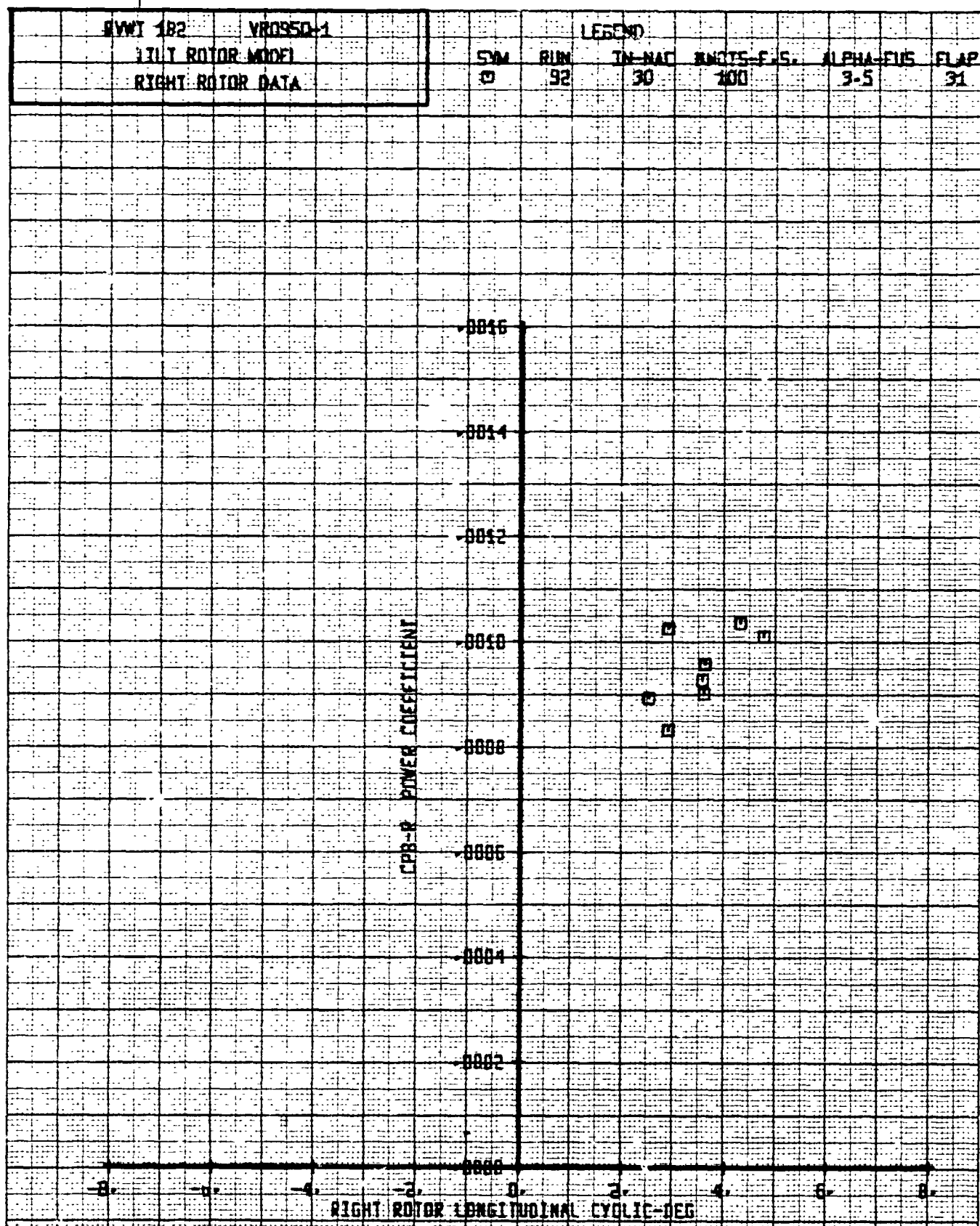
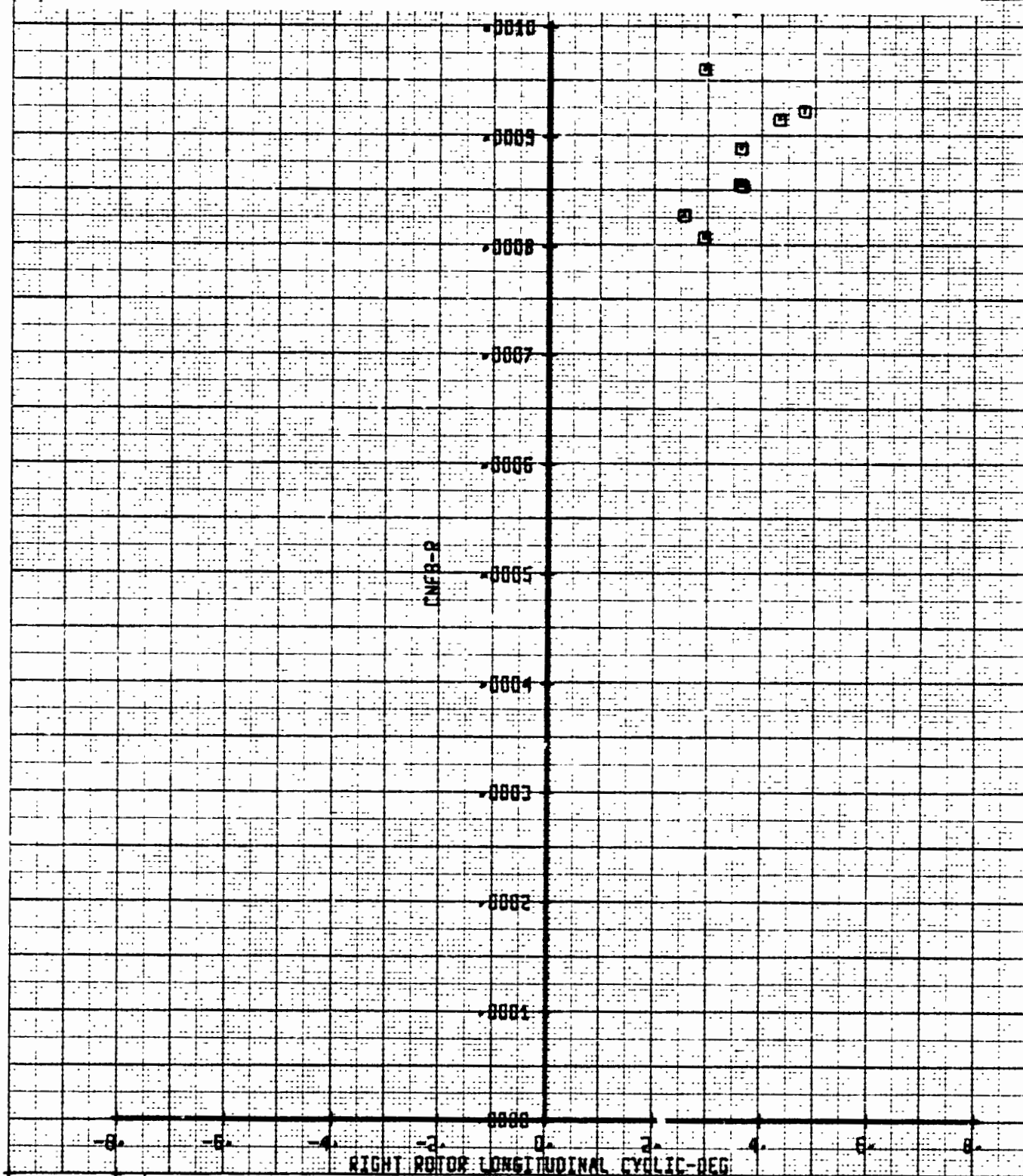


Figure 9-052. Right Rotor Power Coefficient Versus Right Rotor Long. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale
Airspeed 100 Knots.

| | | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|------|
| BVWT 182 | VR0950-1 | LEGEND | | | | | |
| TILT ROTOR MODEL | | Sym | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FUS | FLAP |
| RIGHT ROTOR DATA | | 9 | 92 | 30 | 100 | 3.5 | 31 |

Figure 9-053. Right Rotor Normal Force Coefficient Versus Right Rotor Long. Cyclic ψ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.



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Refer to Section 3.0

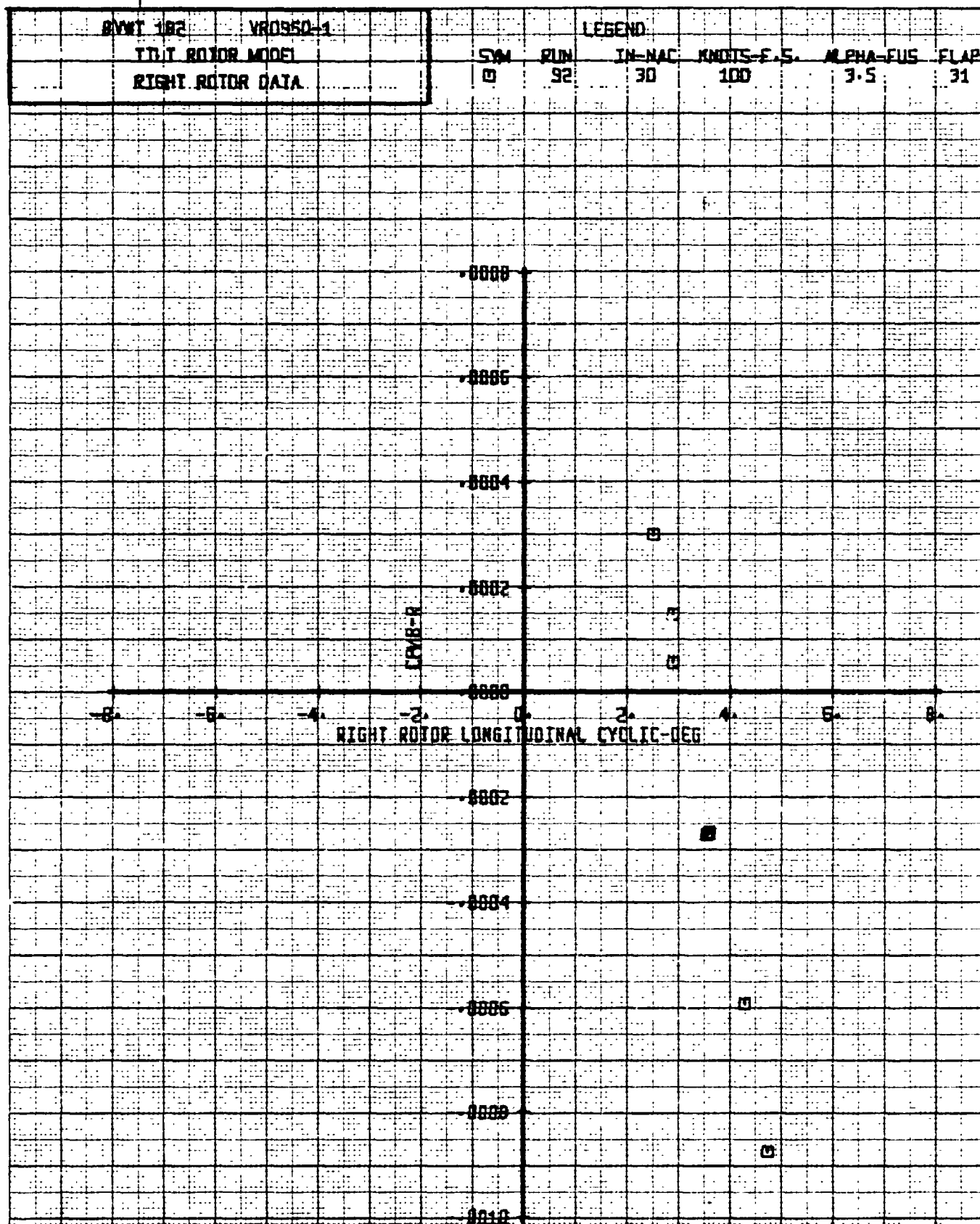


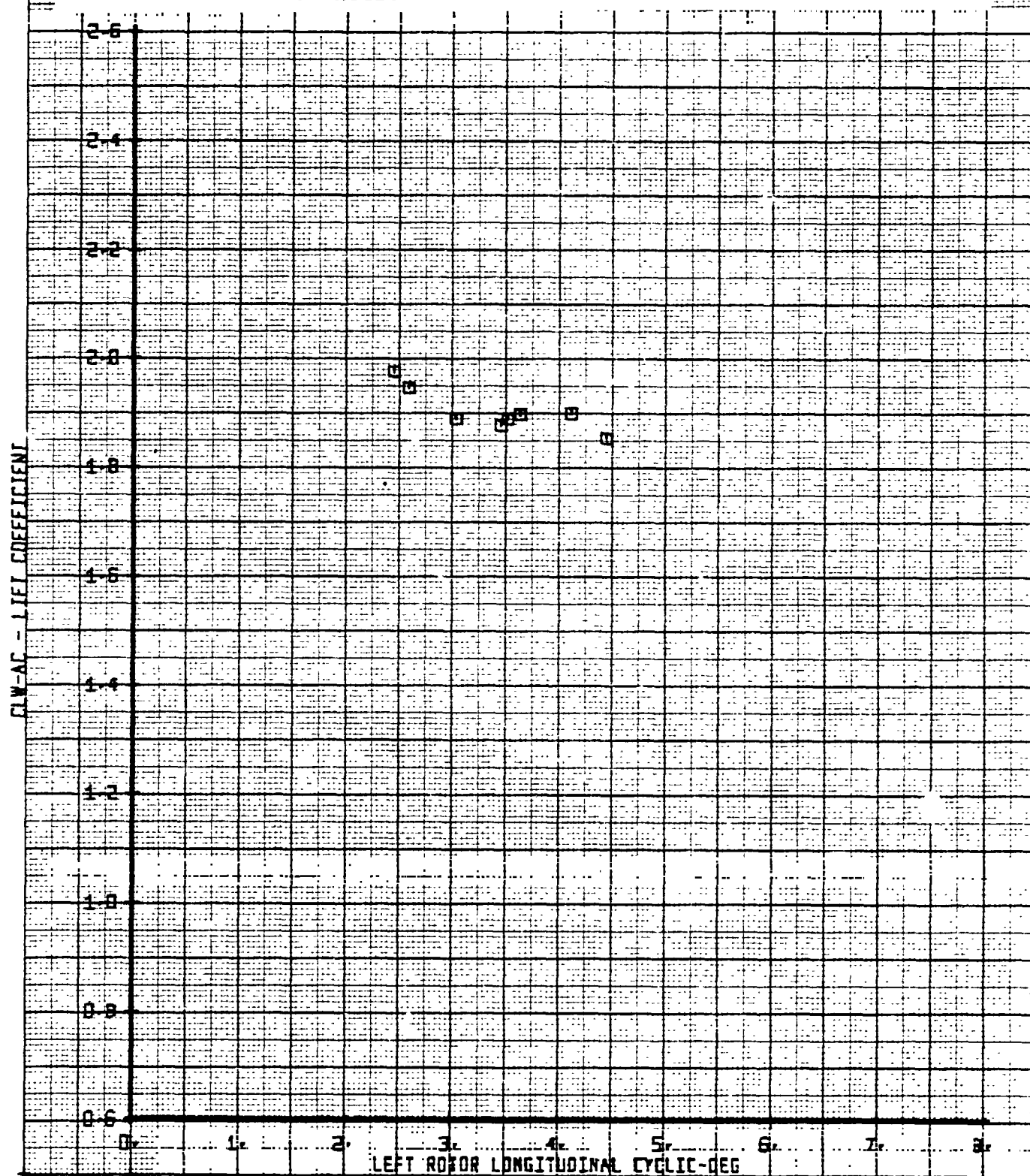
Figure 9-054. Right Rotor Pitching Moment Versus Right Rotor Long. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale
Airspeed 100 Knots.

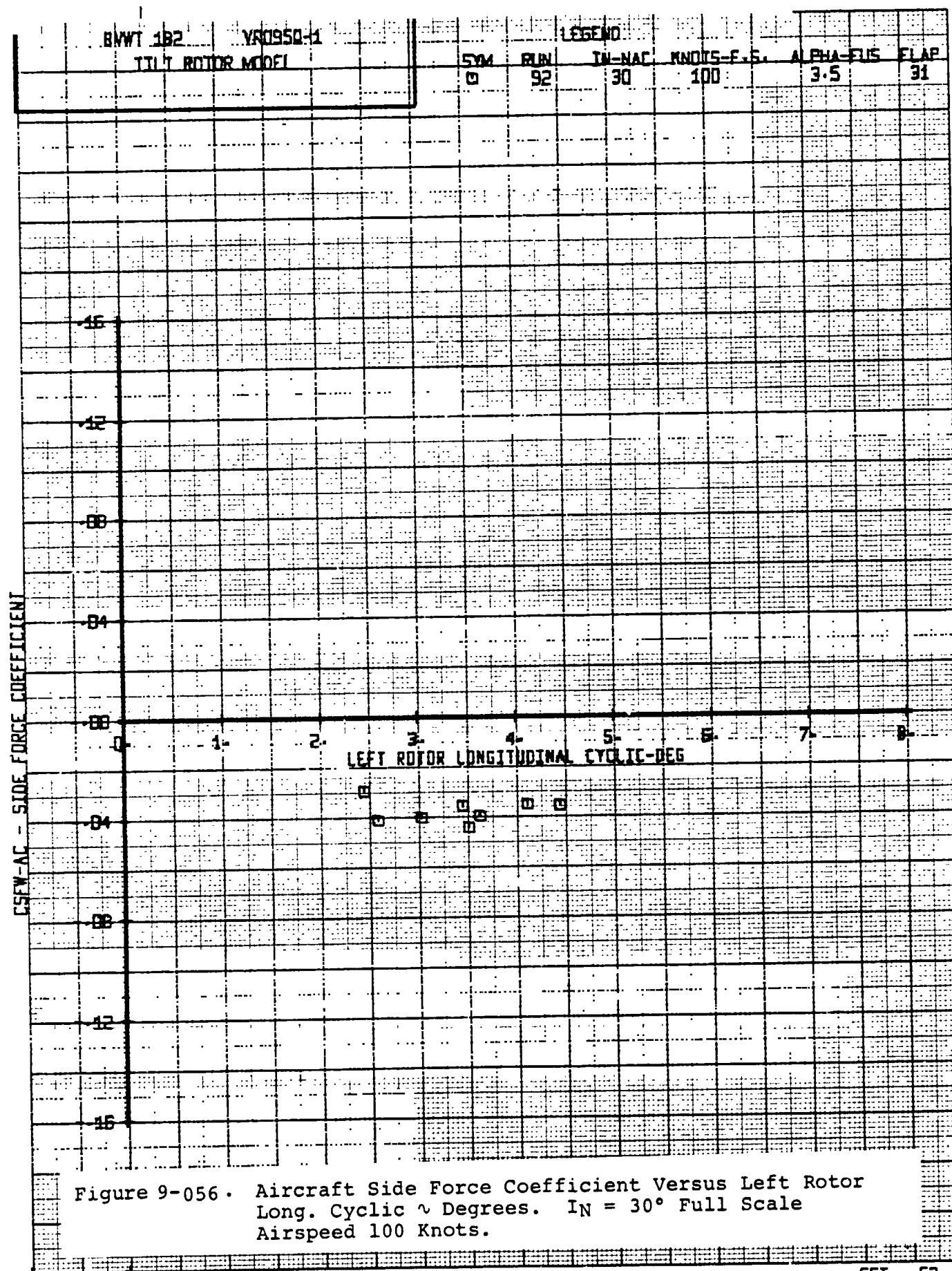
D238-10000-3

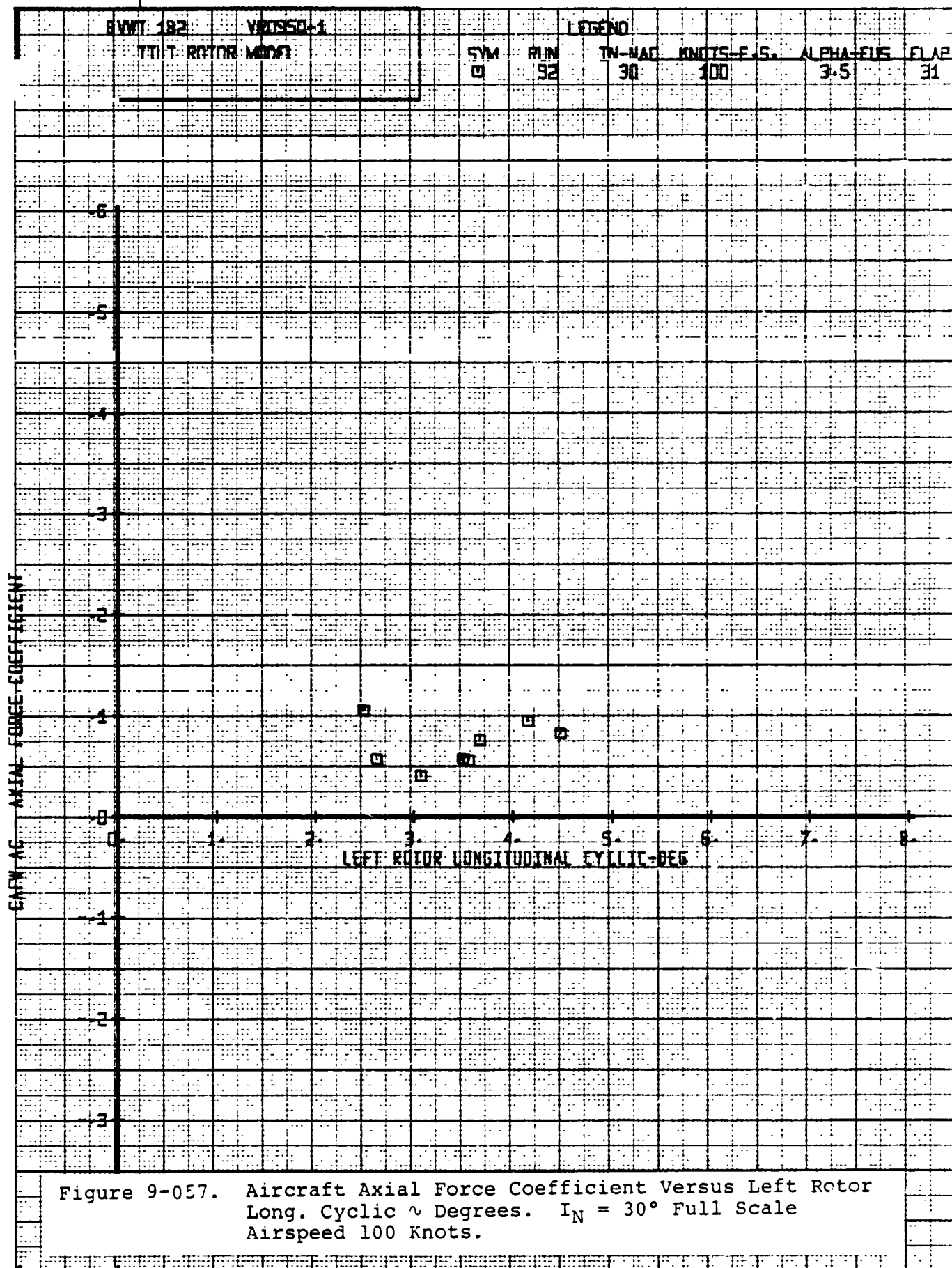
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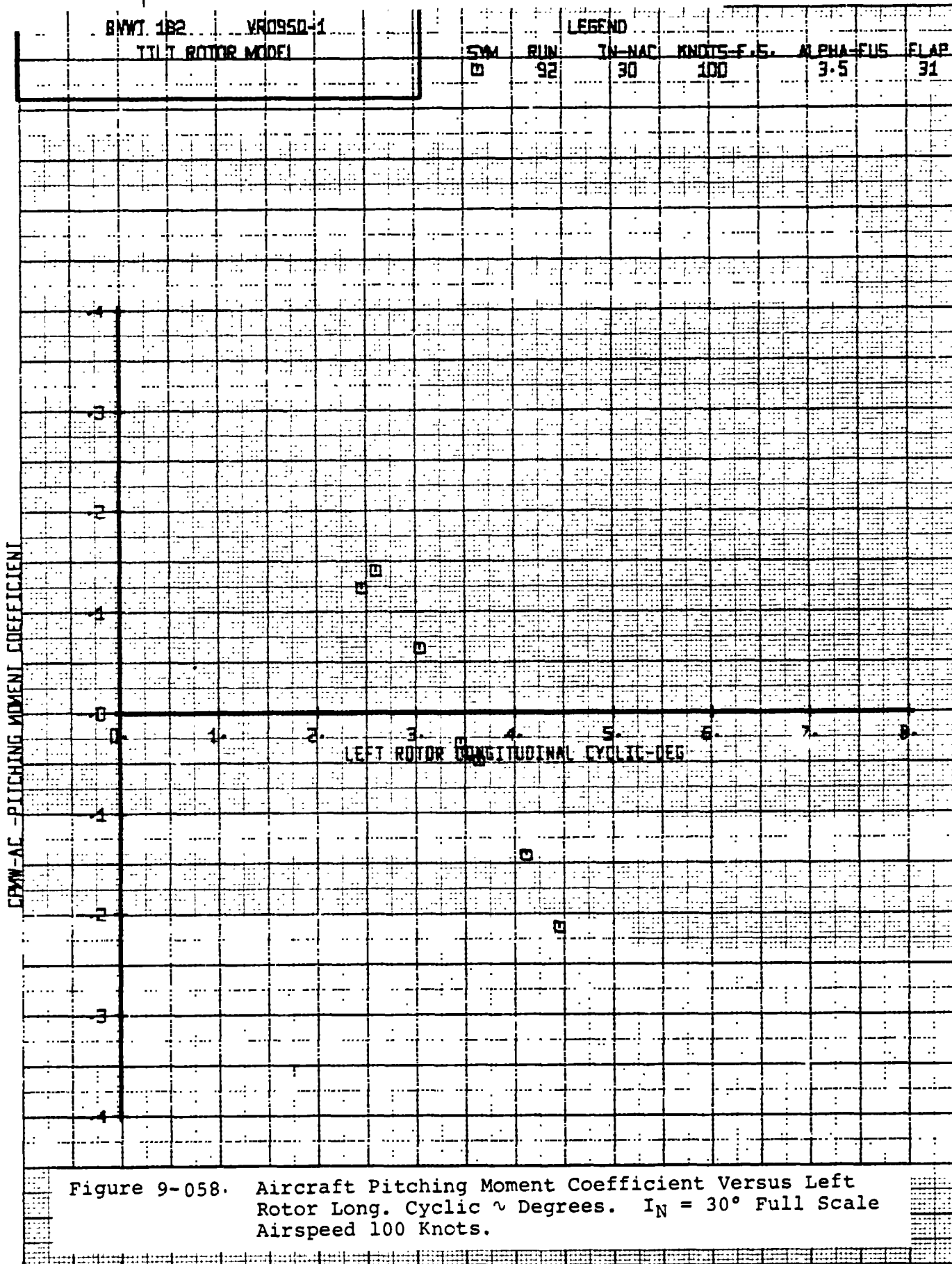
| | | | | | | | | | |
|------------------|--|----------|--|--------|-----|--------|------------|-----------|------|
| BVWT 182 | | VRO950-1 | | LEGEND | | | | | |
| TILT ROTOR MODEL | | | | SYM | RUN | IN-NAC | KNOTS-F.F. | ALPHA-FUS | FLAP |
| | | | | 0 | 92 | 30 | 100 | 3.5 | 31 |

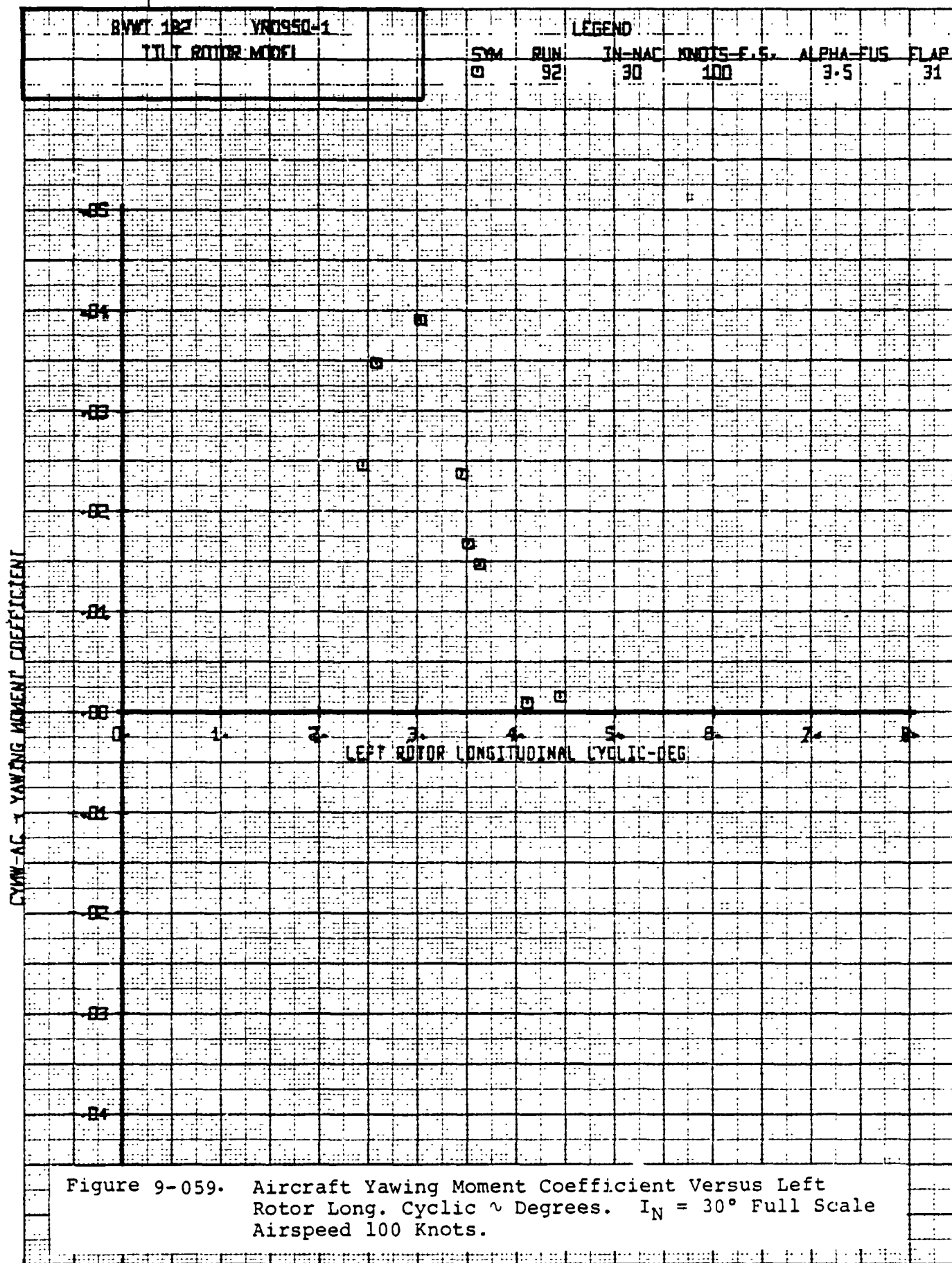
Figure 9-055. Aircraft Lift Coefficient Versus Left Rotor Long. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.

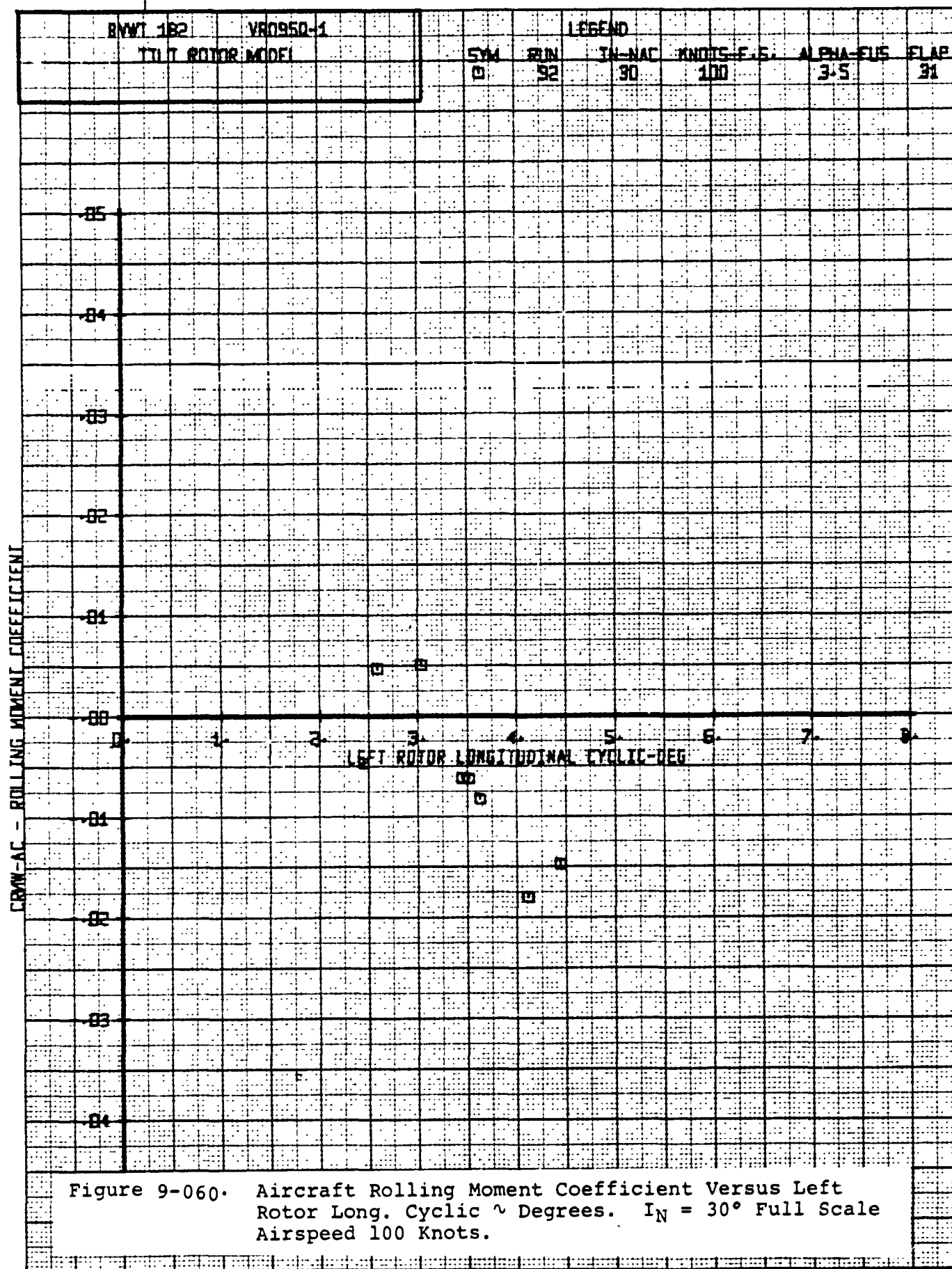


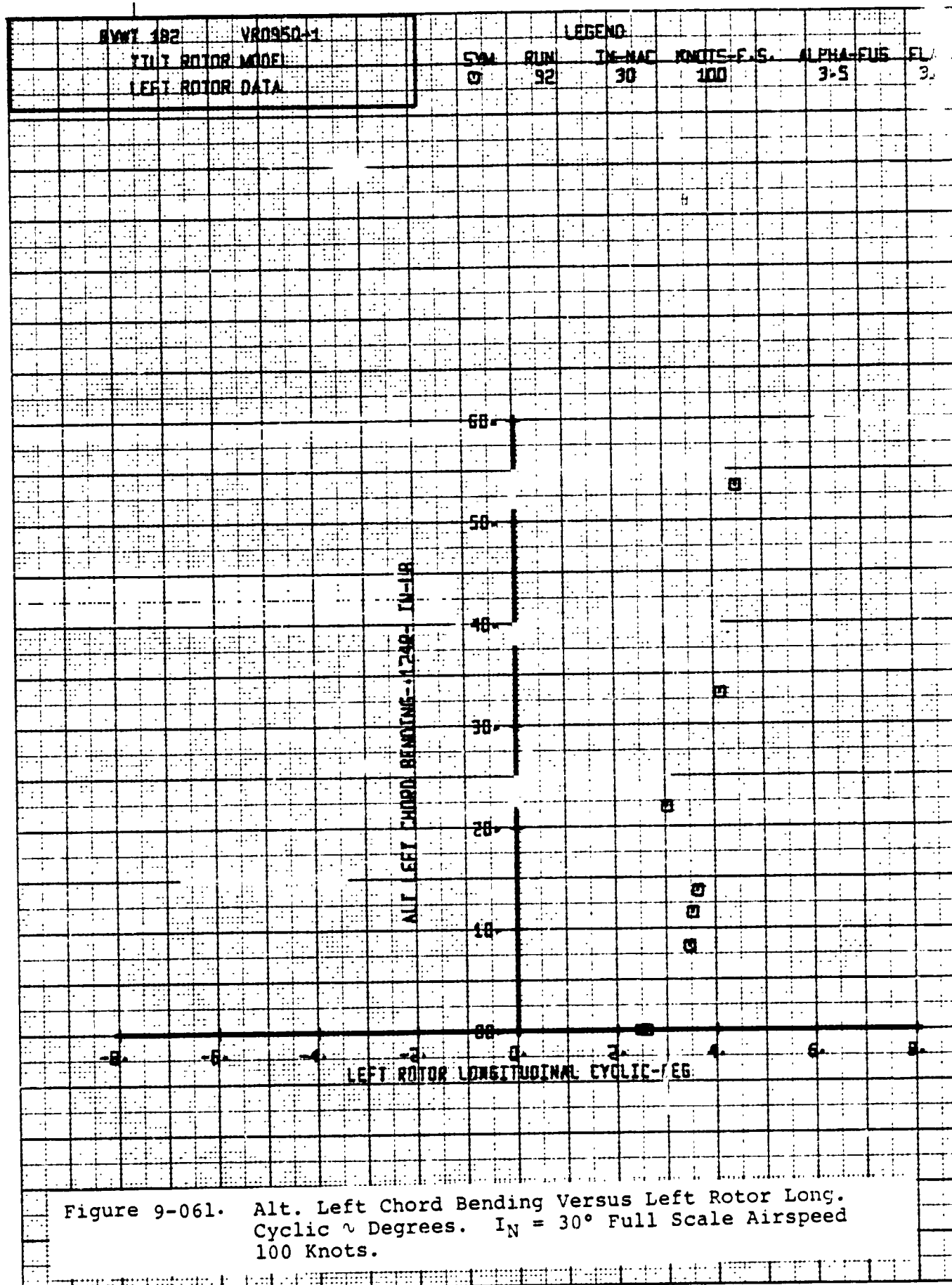


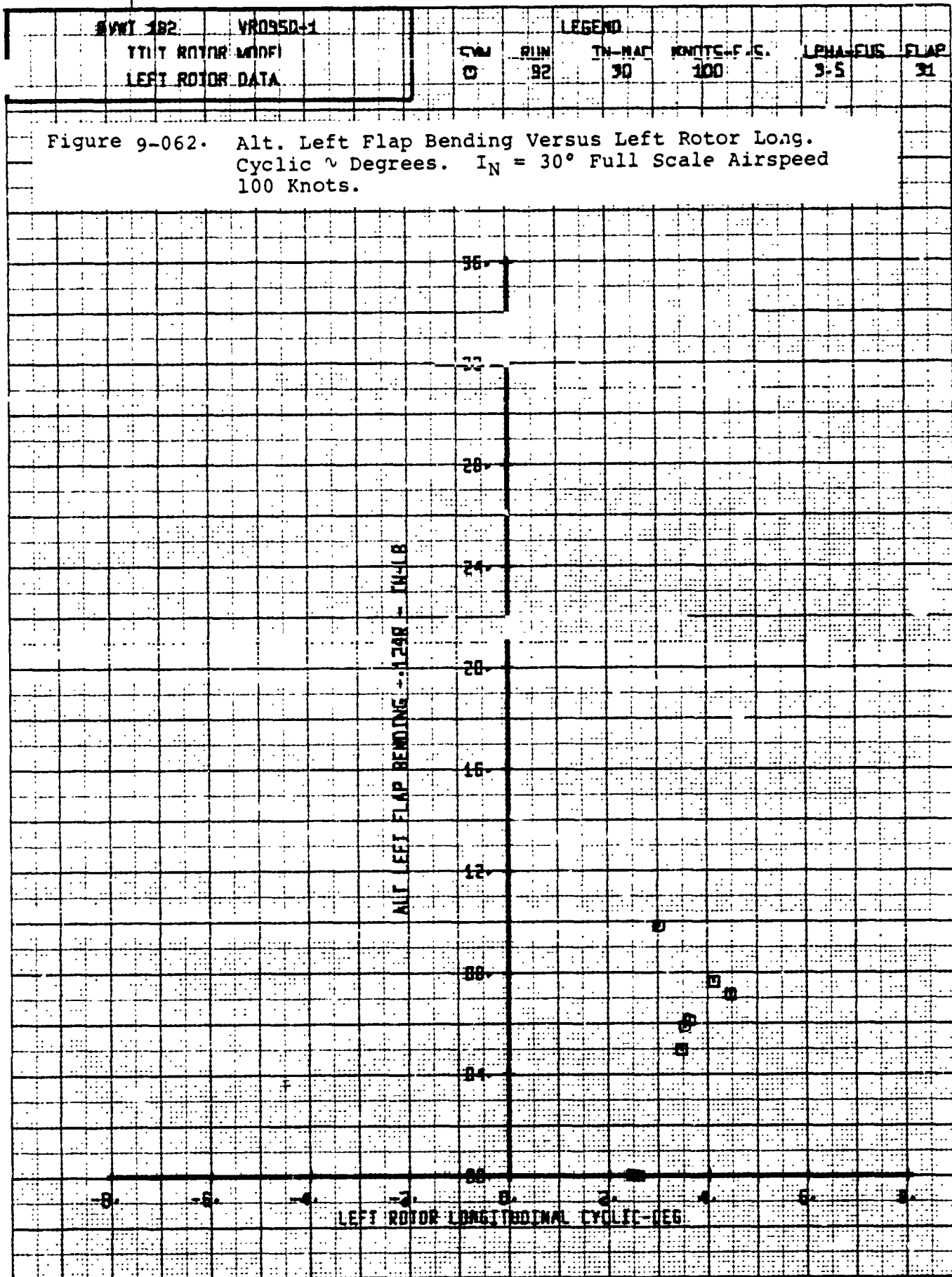






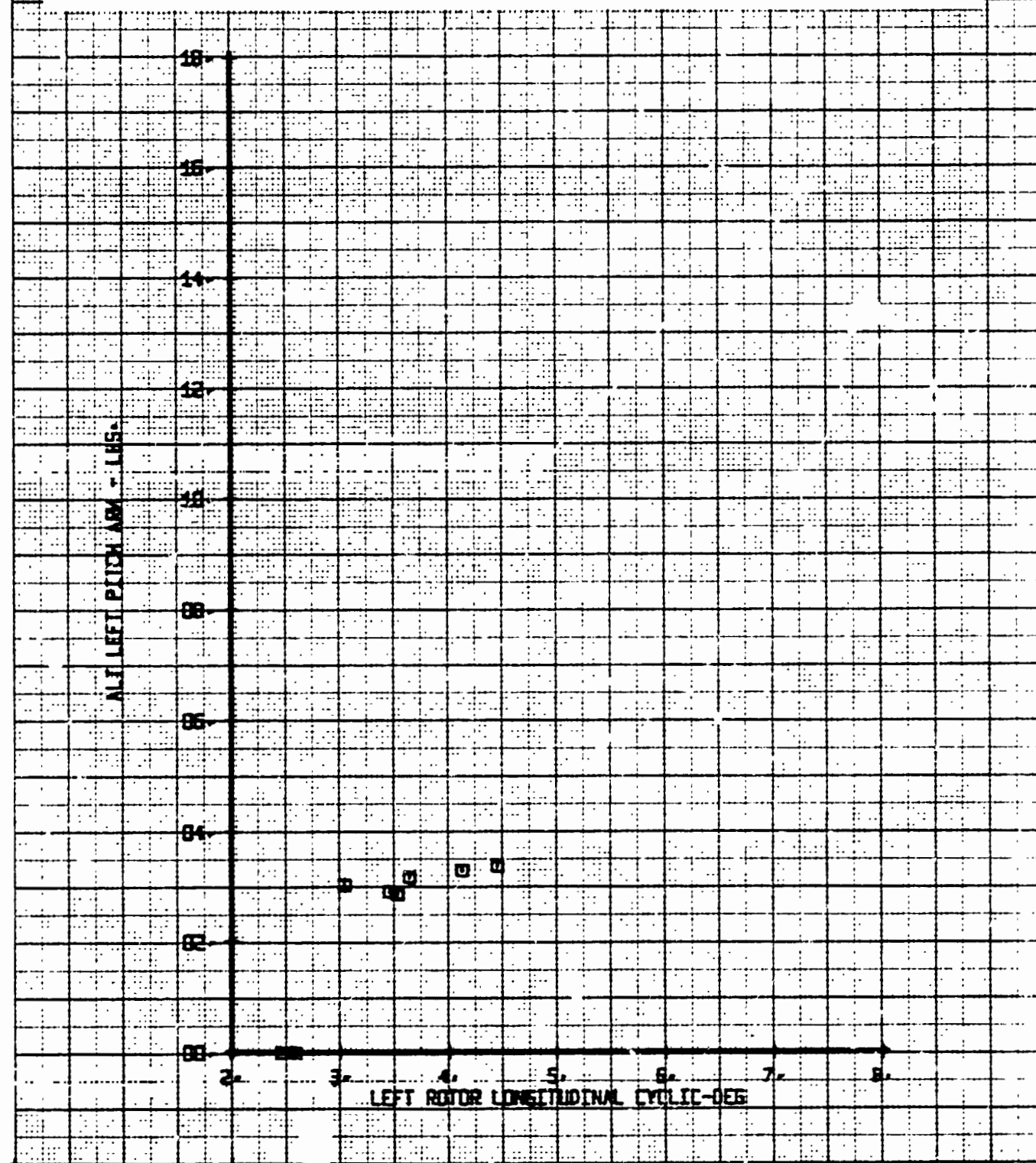


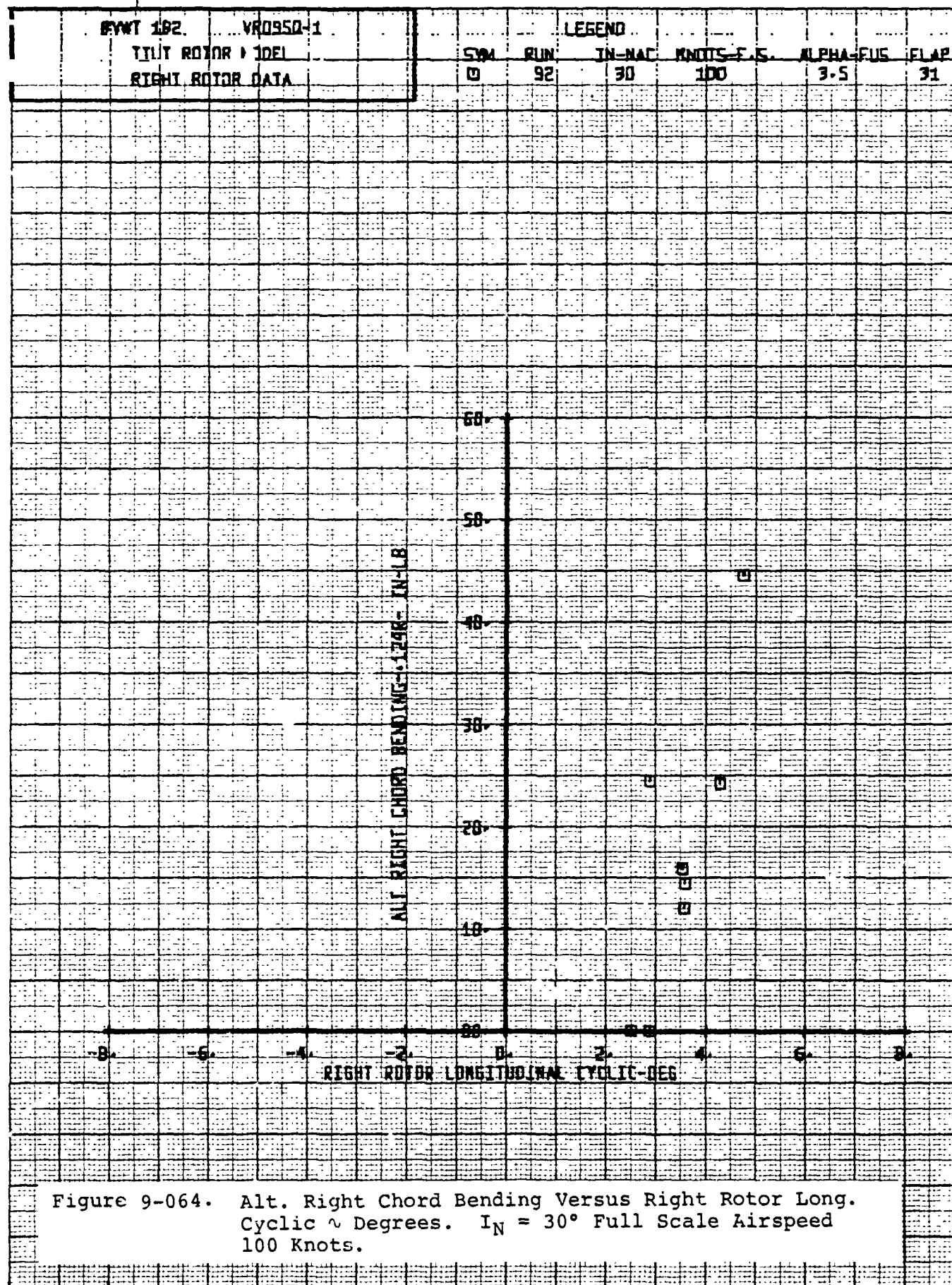




| | | | | | | | |
|-----------------|----------|-----|-----|--------|------------|-----------|------|
| BWWT 182 | VR0950-1 | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FUS | FLAP |
| TILT ROTOR MODE | | 0 | 92 | 30 | 100 | 3.5 | 31 |
| LEFT ROTOR DATA | | | | | | | |

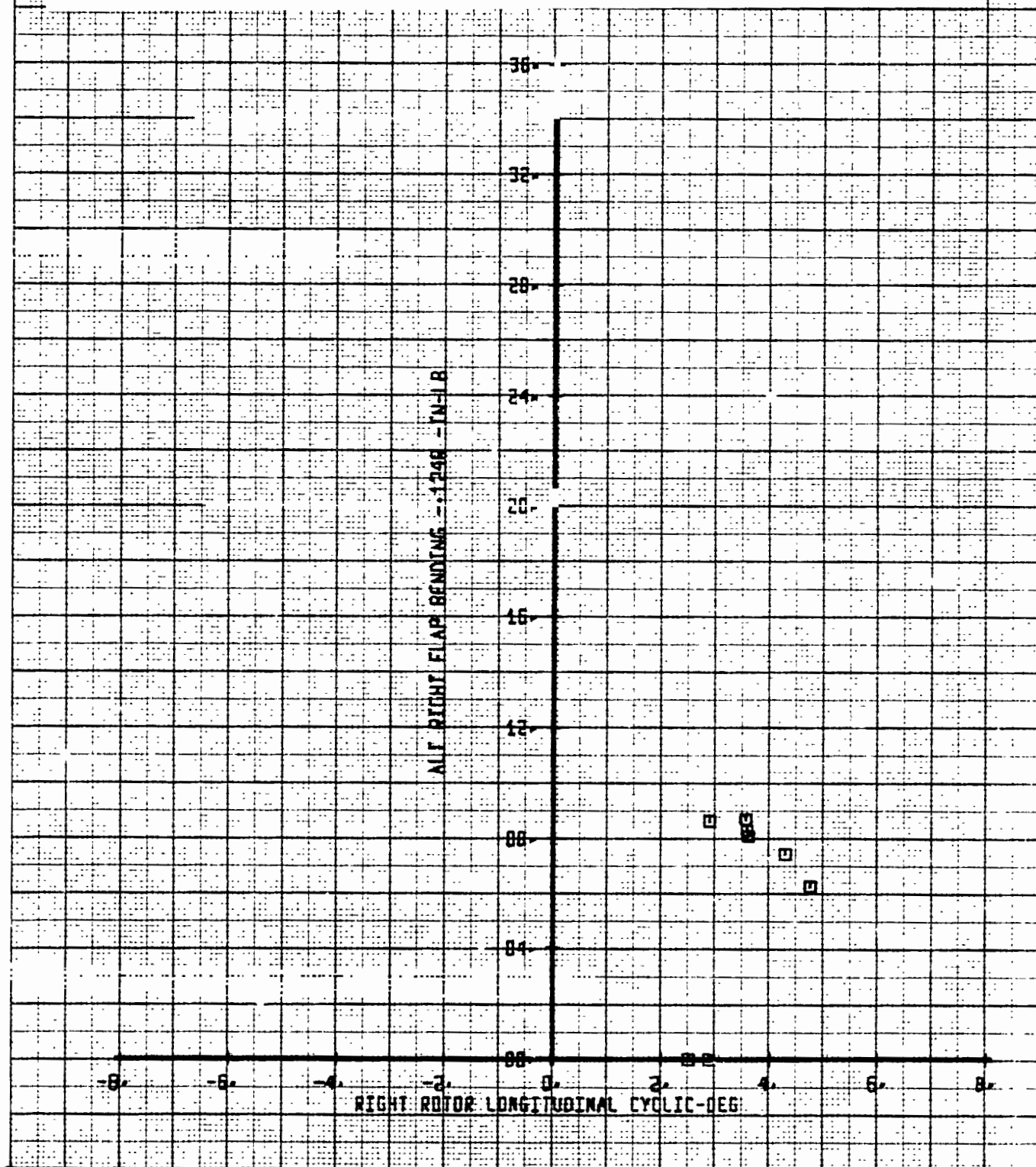
Figure 9-063. Alt. Left Pitch Link Load Versus Left Rotor Long. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.





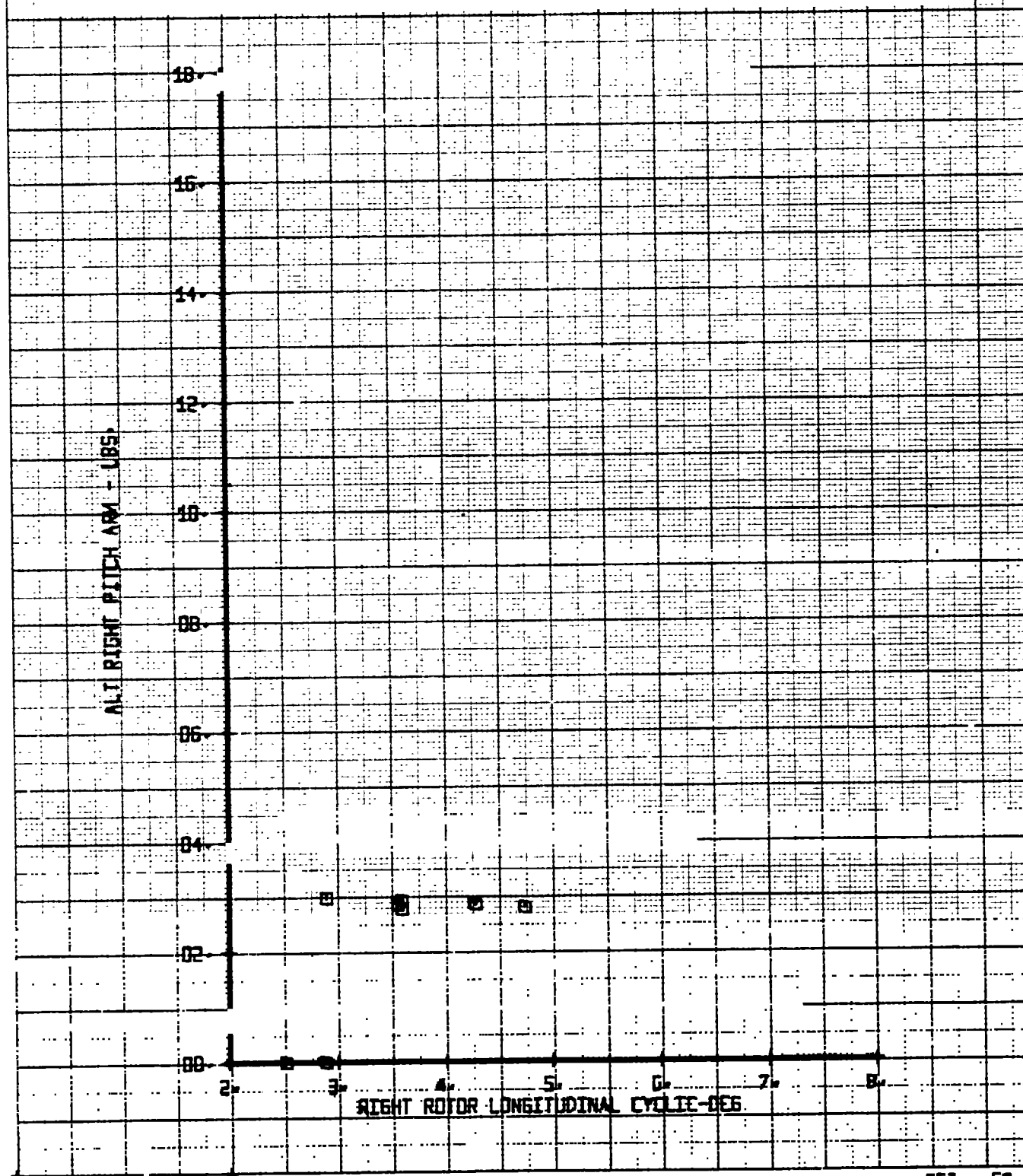
| | | | | | | |
|----------|------------------|--------|-----|--------|------------|-----------|
| BVWT 182 | YR0950-1 | LEGEND | | | | |
| YR0950-1 | RIGHT ROTOR DATA | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FUS |
| | | 0 | 92 | 30 | 100 | 3-5 |
| | | | | | | FLAP 31 |

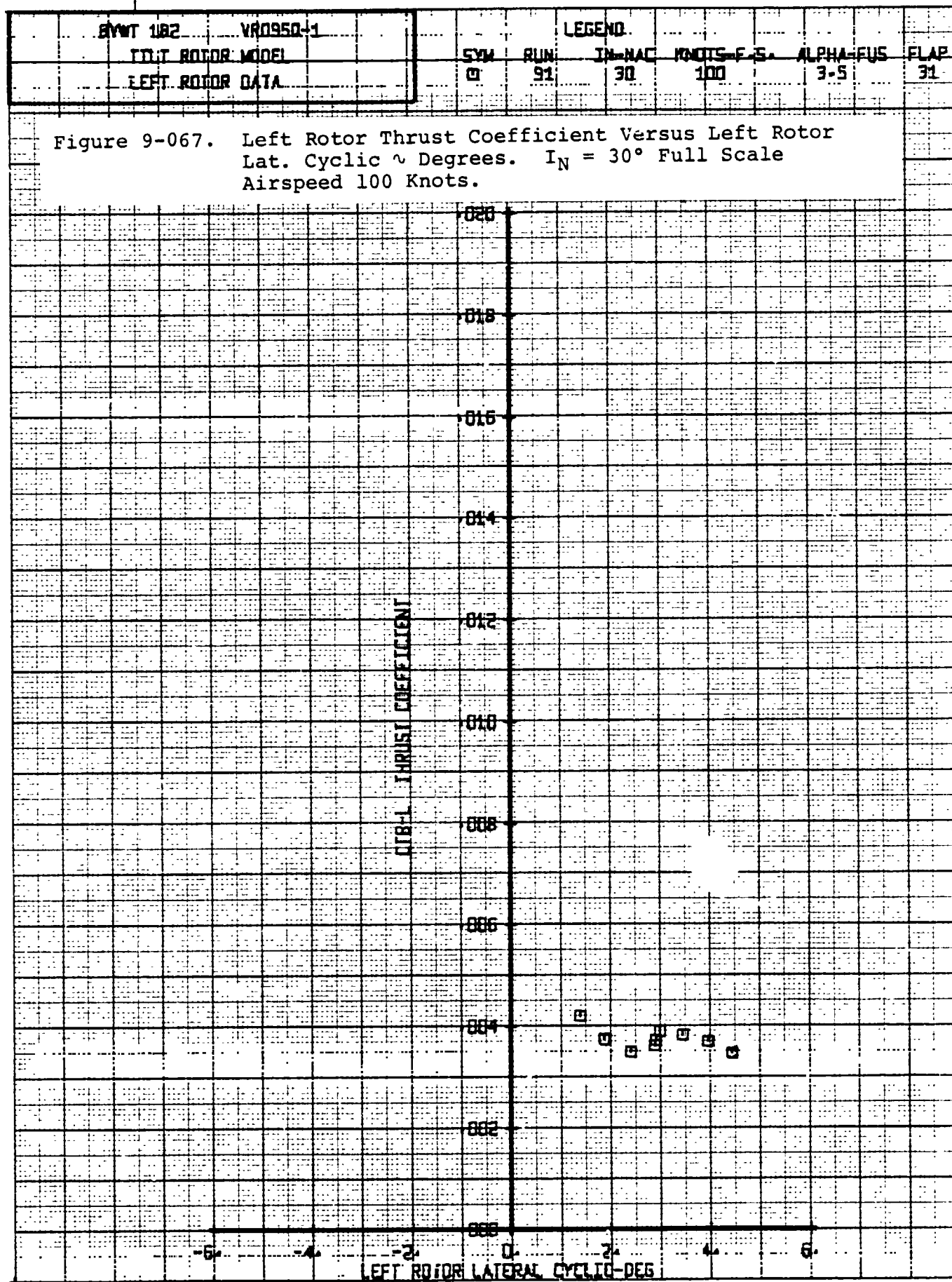
Figure 9-065. Alt. Right Flap Bending Versus Right Rotor Long. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.



| | | | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|------|--|
| B/WT 182 | VR0950-1 | LEGEND | | | | | | |
| LEFT ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-POS | FLAP | |
| RIGHT ROTOR DATA | | □ | 92 | 30 | 100 | 3.5 | 31 | |

Figure 9-066. Alt. Right Pitch Link Load Versus Right Rotor Long. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.





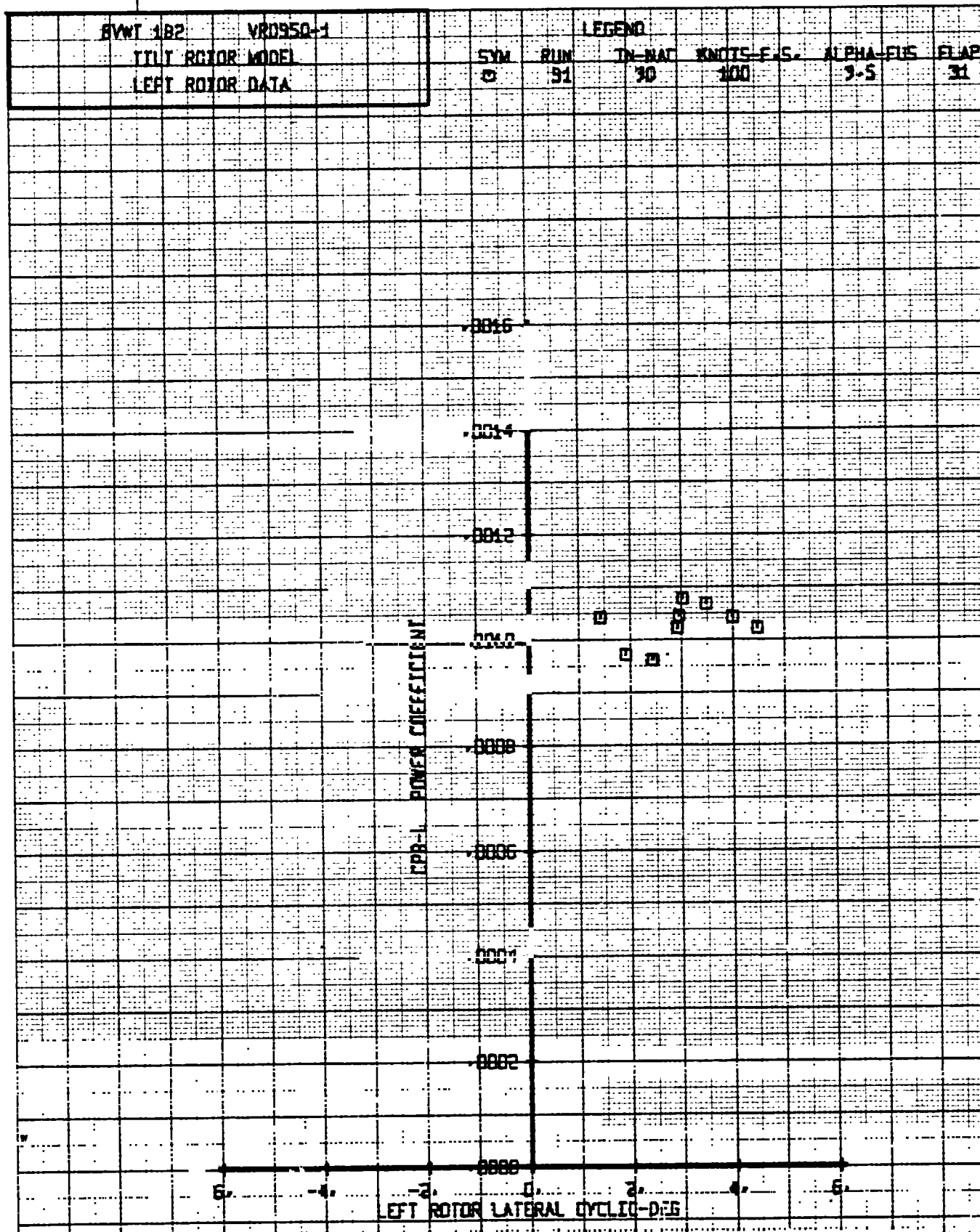
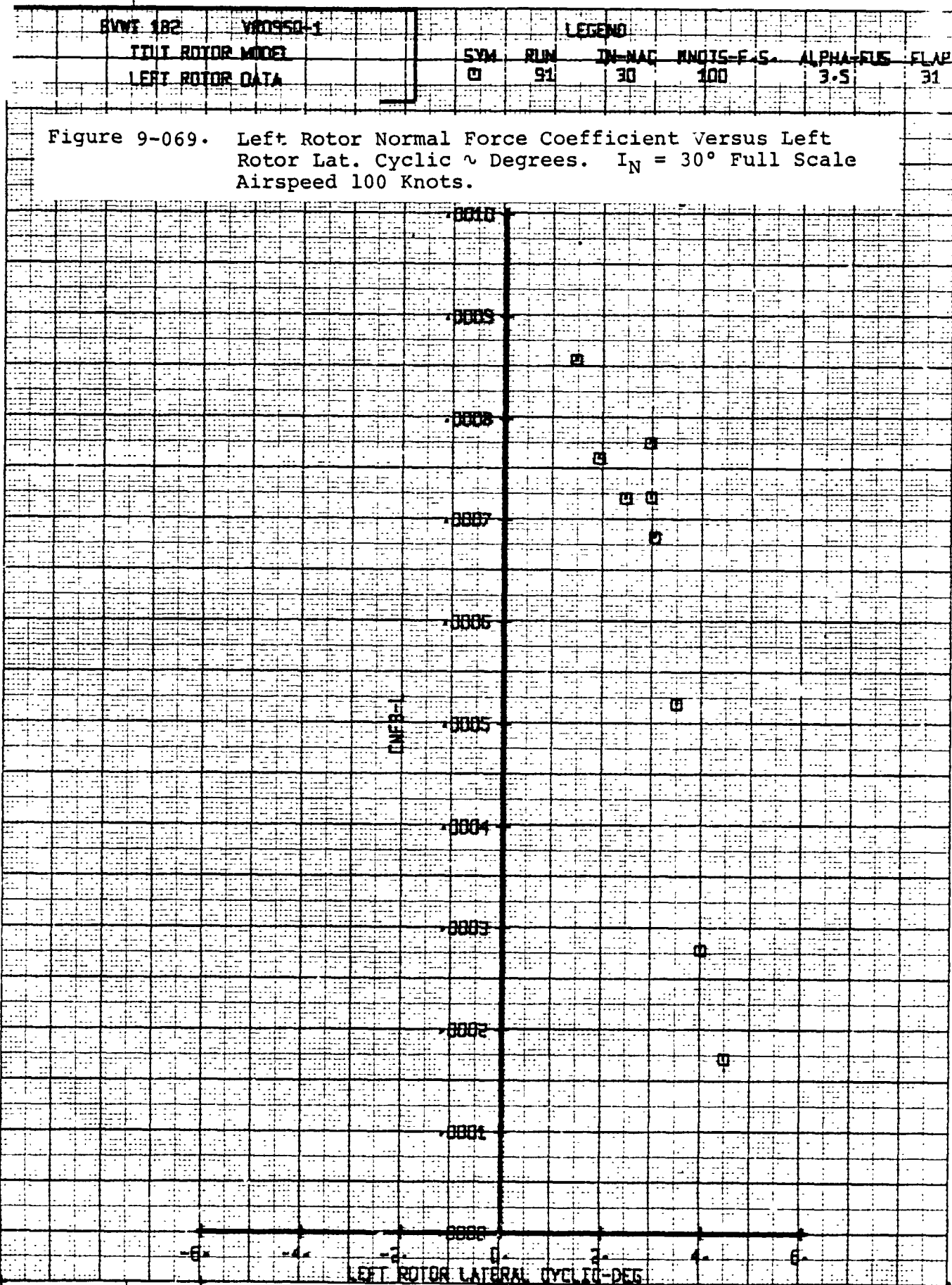
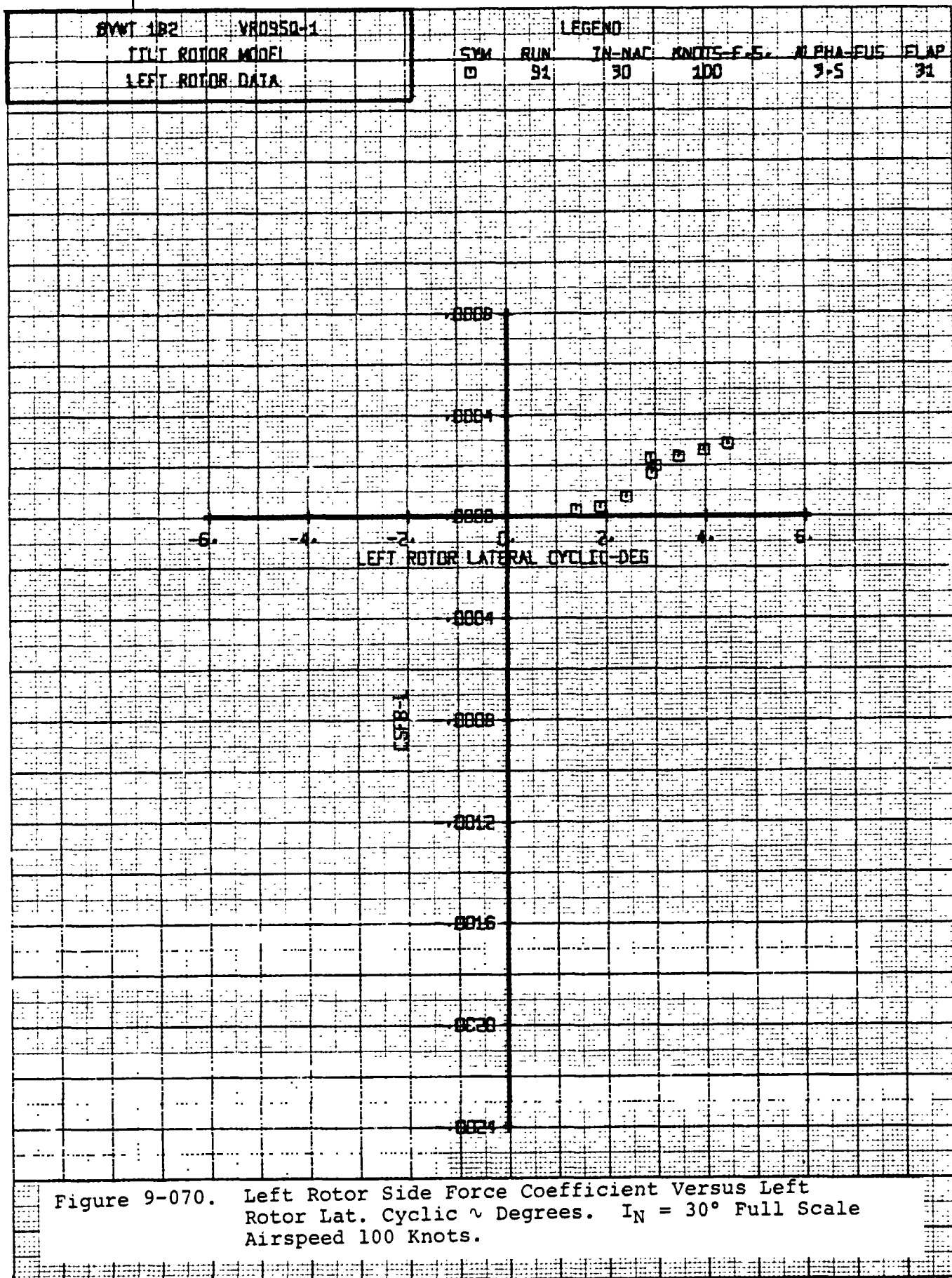


Figure 9-068. Left Rotor Power Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.





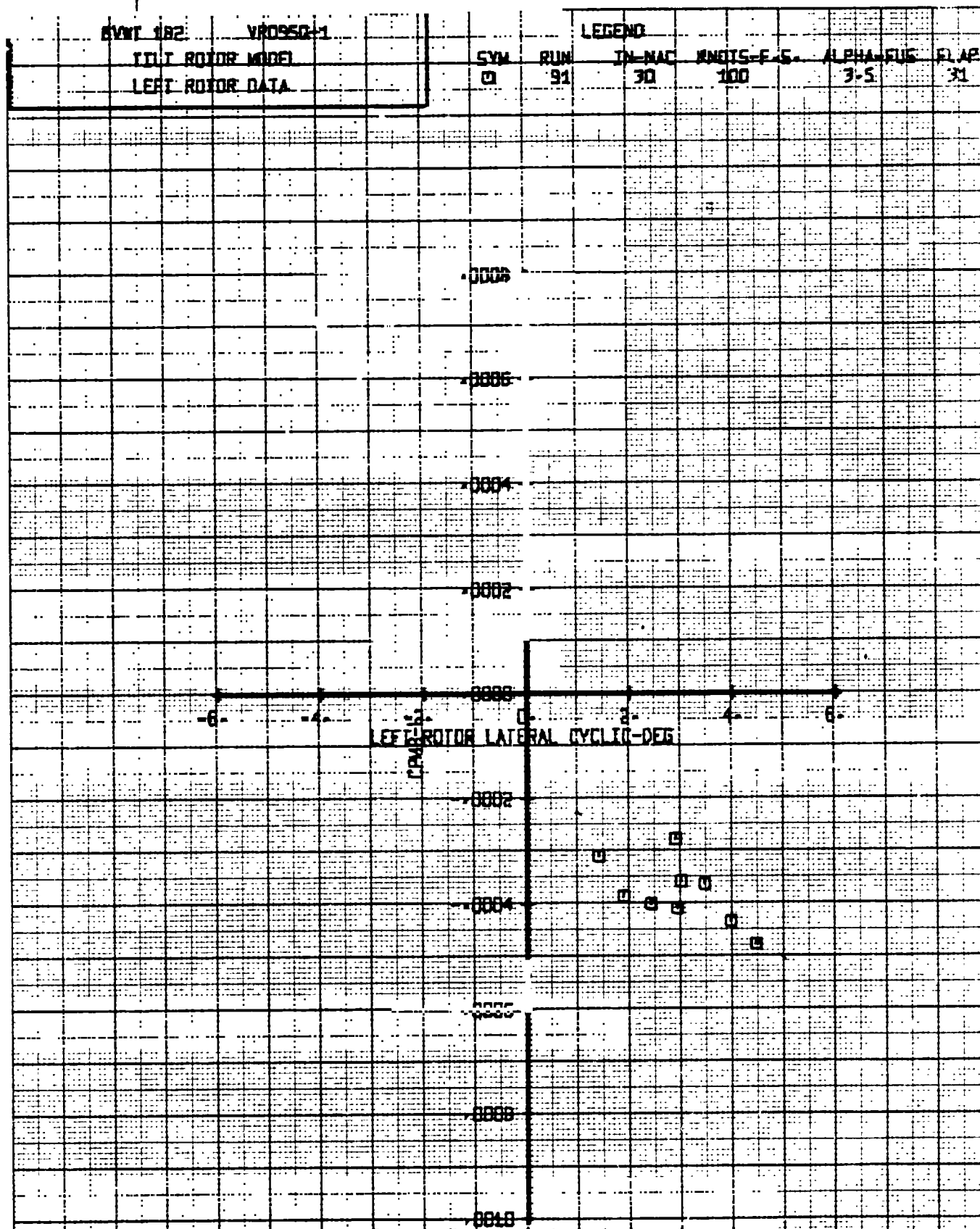


Figure 9-071. Left Rotor Pitching Moment Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.

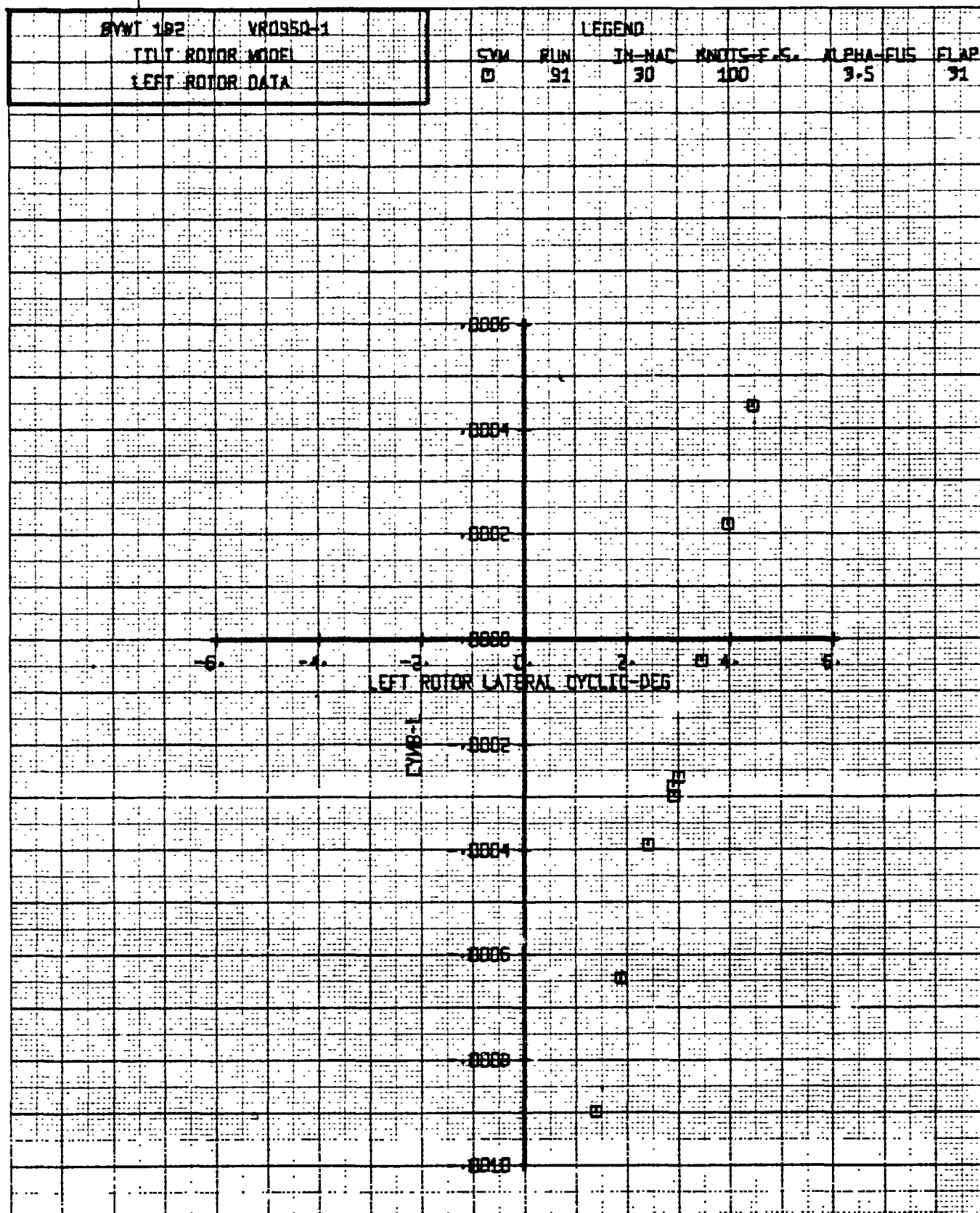
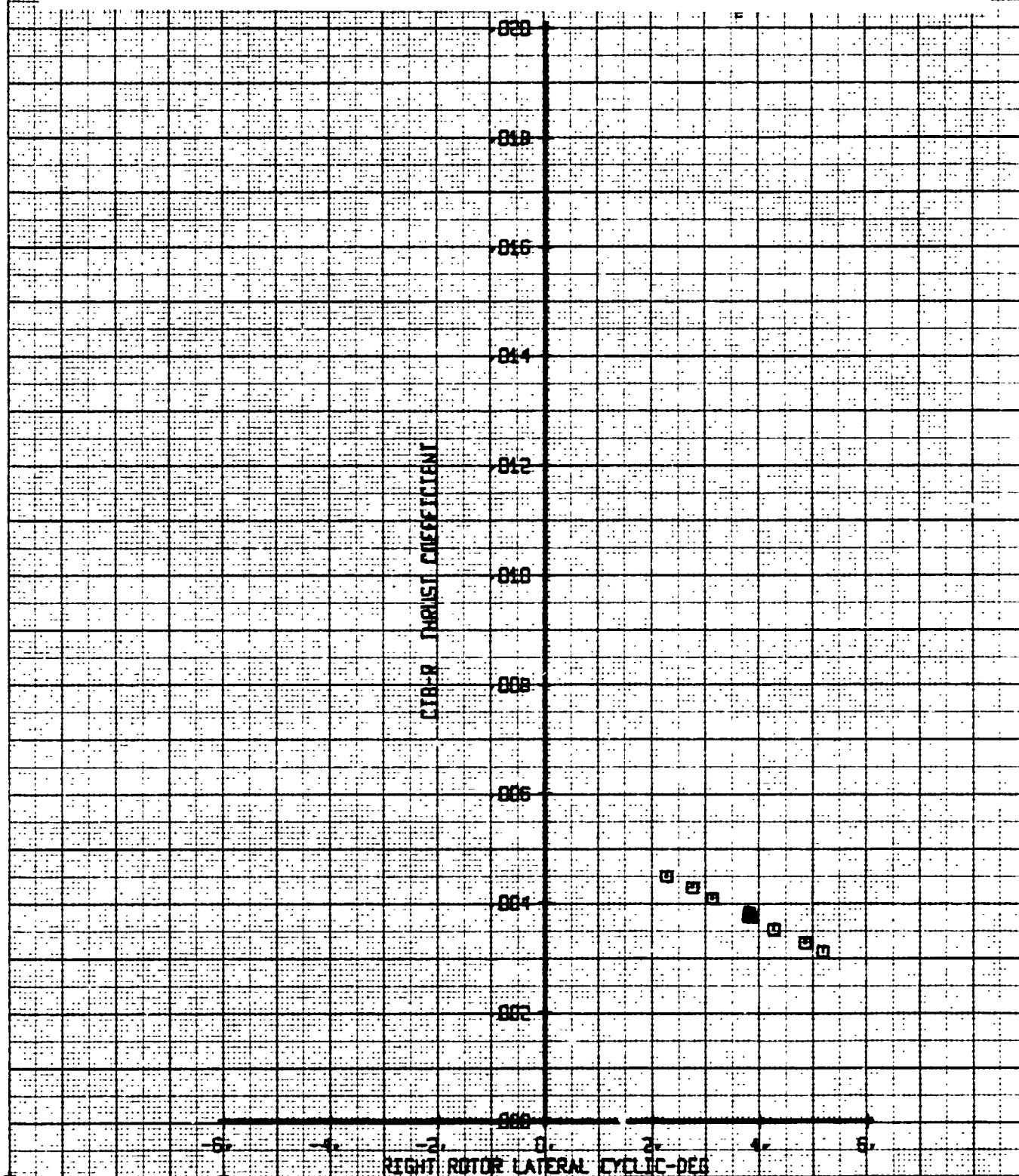


Figure 9-072. Left Rotor Yawing Moment Coefficient Versus Left Rotor Lat. Cyclic \sim Degrees. $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.

| | | | | | | | | | | | |
|------------------|--|----------|--|--------|-----|--------|------------|-----------|------|--|--|
| BVWT 182 | | VR0950-1 | | LEGEND | | | | | | | |
| TILT ROTOR MODE | | | | Sym | RUN | IN-MAG | KNOTS-F.S. | ALPHA-FUS | FLAP | | |
| RIGHT ROTOR DATA | | | | 0 | 91 | 30 | 100 | 3-5 | 31 | | |

Figure 9-073. Right Rotor Thrust Coefficient Versus Right Lat. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.



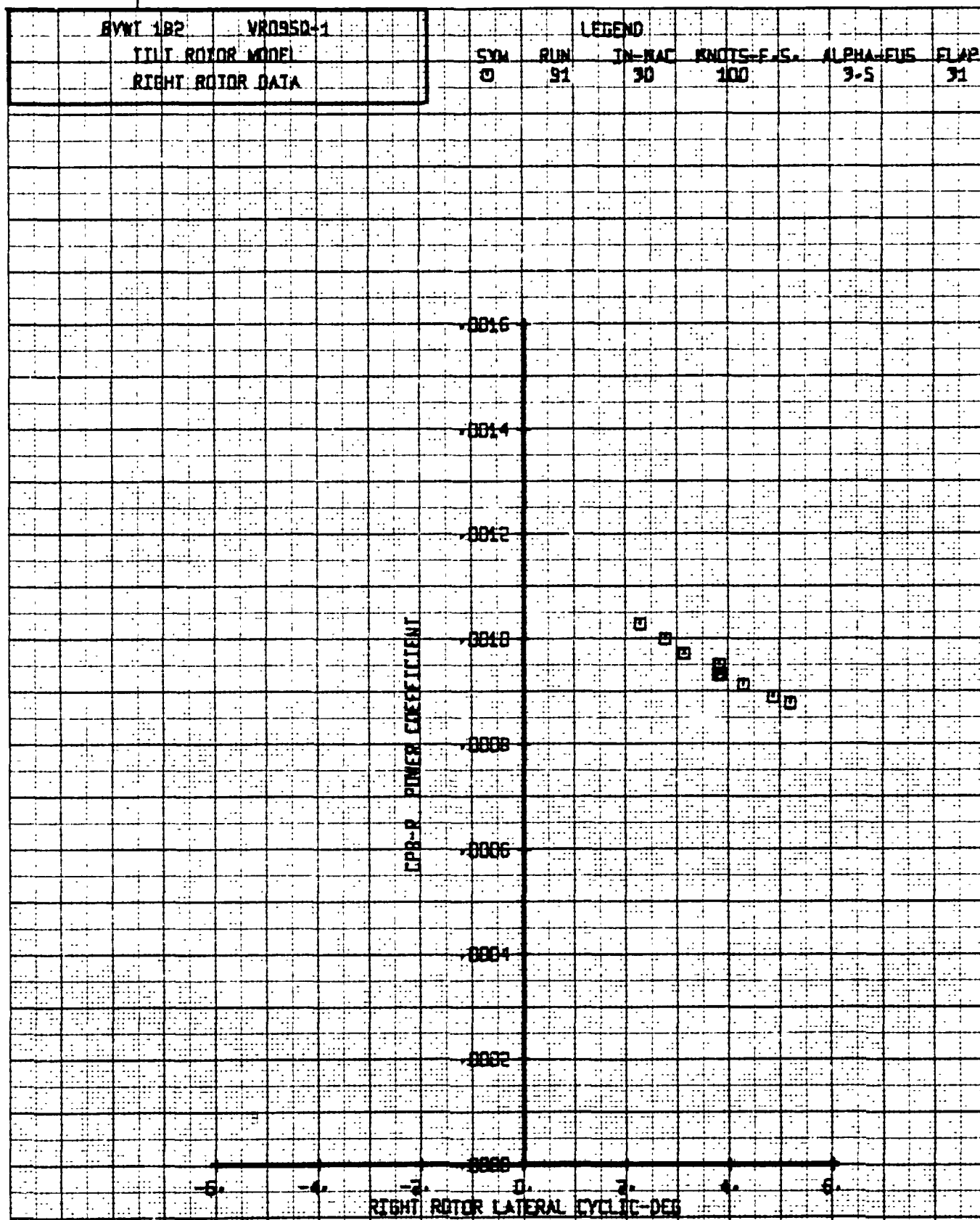
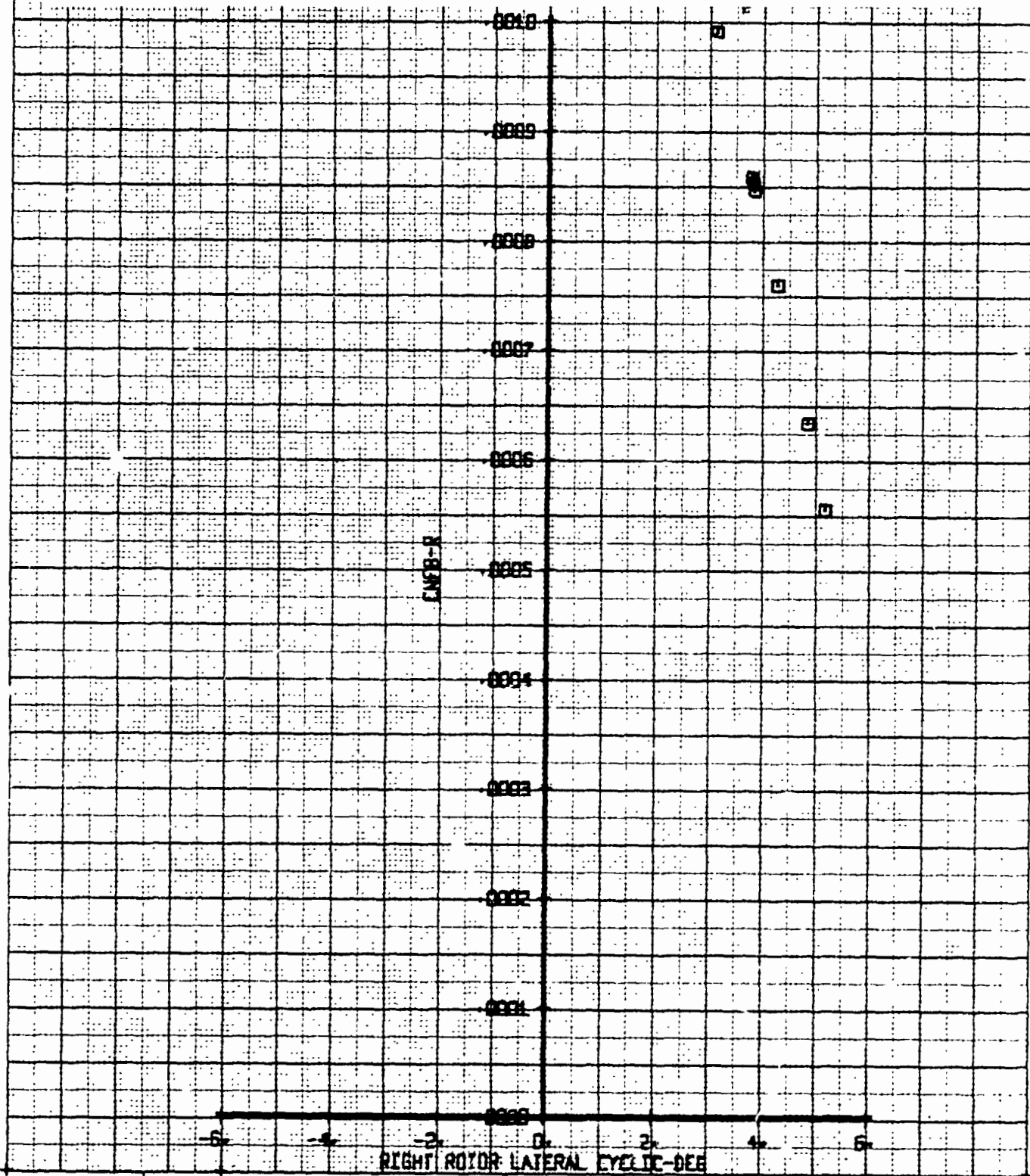


Figure 9-074. Right Rotor Power Coefficient Versus Right Rotor Lat. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale
Airspeed 100 Knots.

| | | | | | | | |
|-------------------|----------|--------|-----|--------|------------|-----------|------|
| BWV 182 | YR0950-1 | LEGEND | | | | | |
| RIGHT ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-E.S. | ALPHA-FUS | CLAP |
| RIGHT ROTOR DATA | | □ | 91 | 30 | 100 | 3.5 | 31 |

Figure 9-075. Right Rotor Normal Force Coefficient Versus Right Rotor Lat. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.



Data Deleted
Refer to Section 3.0

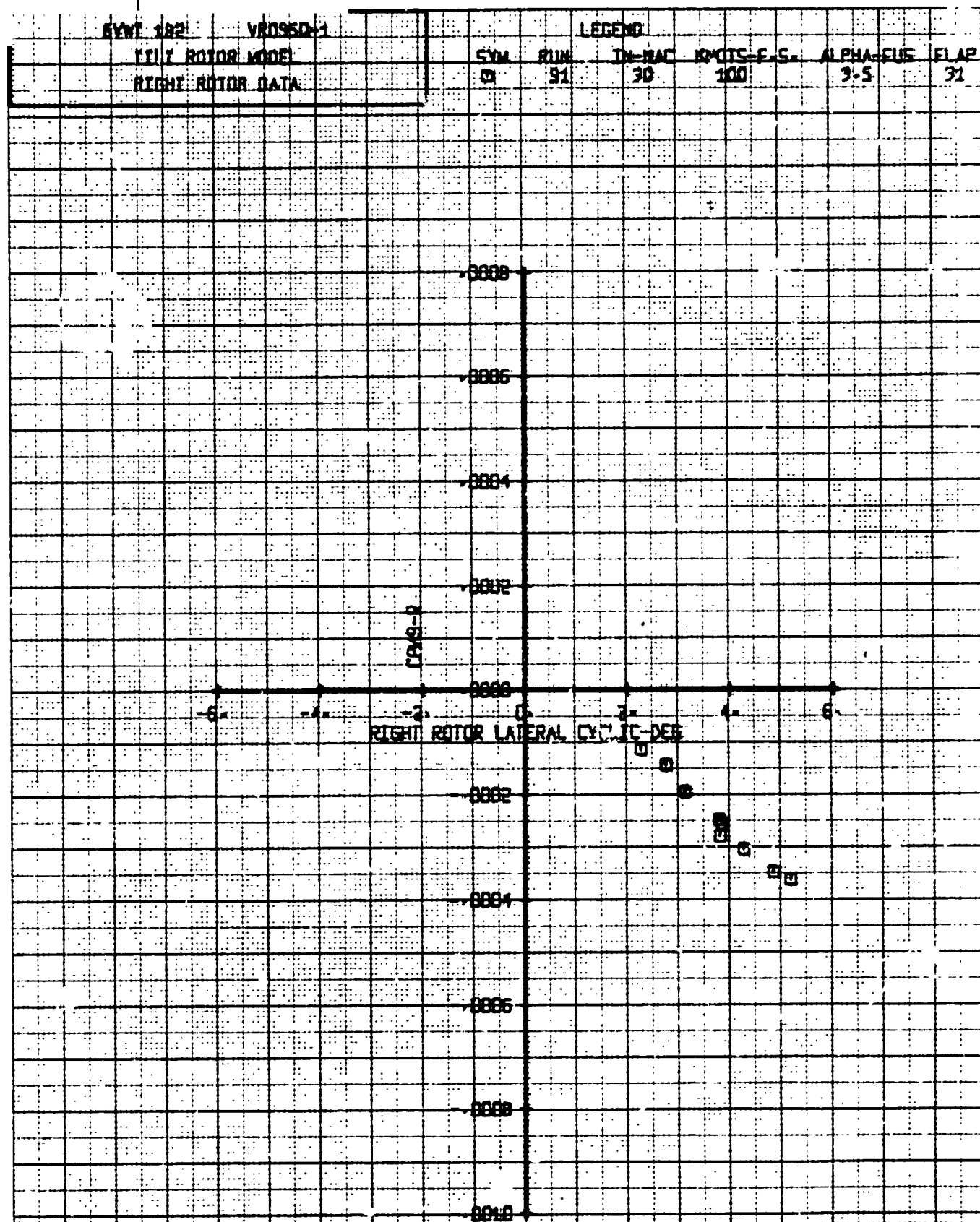


Figure 9-076. Right Rotor Pitching Moment Coefficient Versus Right Rotor Lat. Cyclic in Degrees. $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.

Data Deleted
Refer to Section 3.0

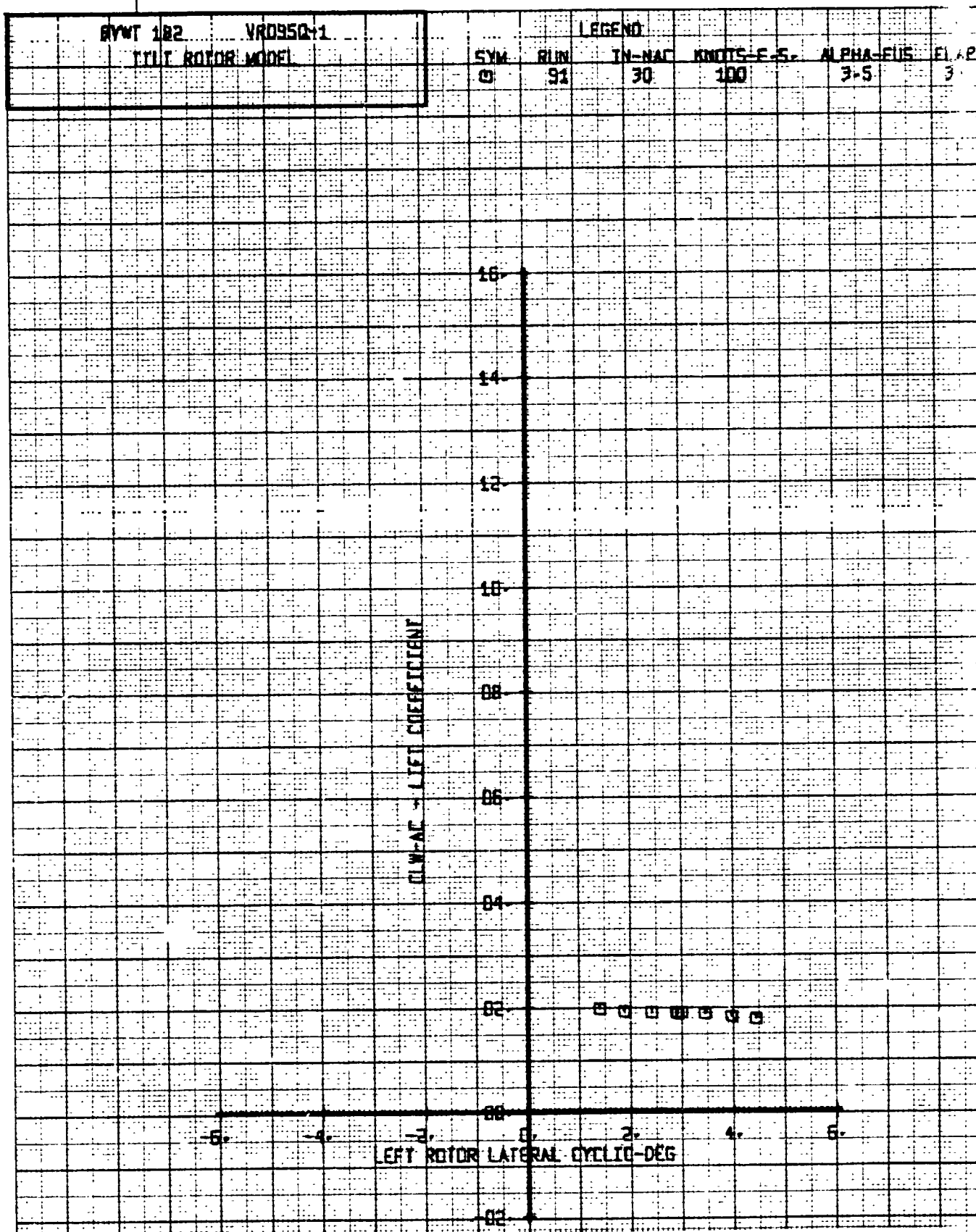
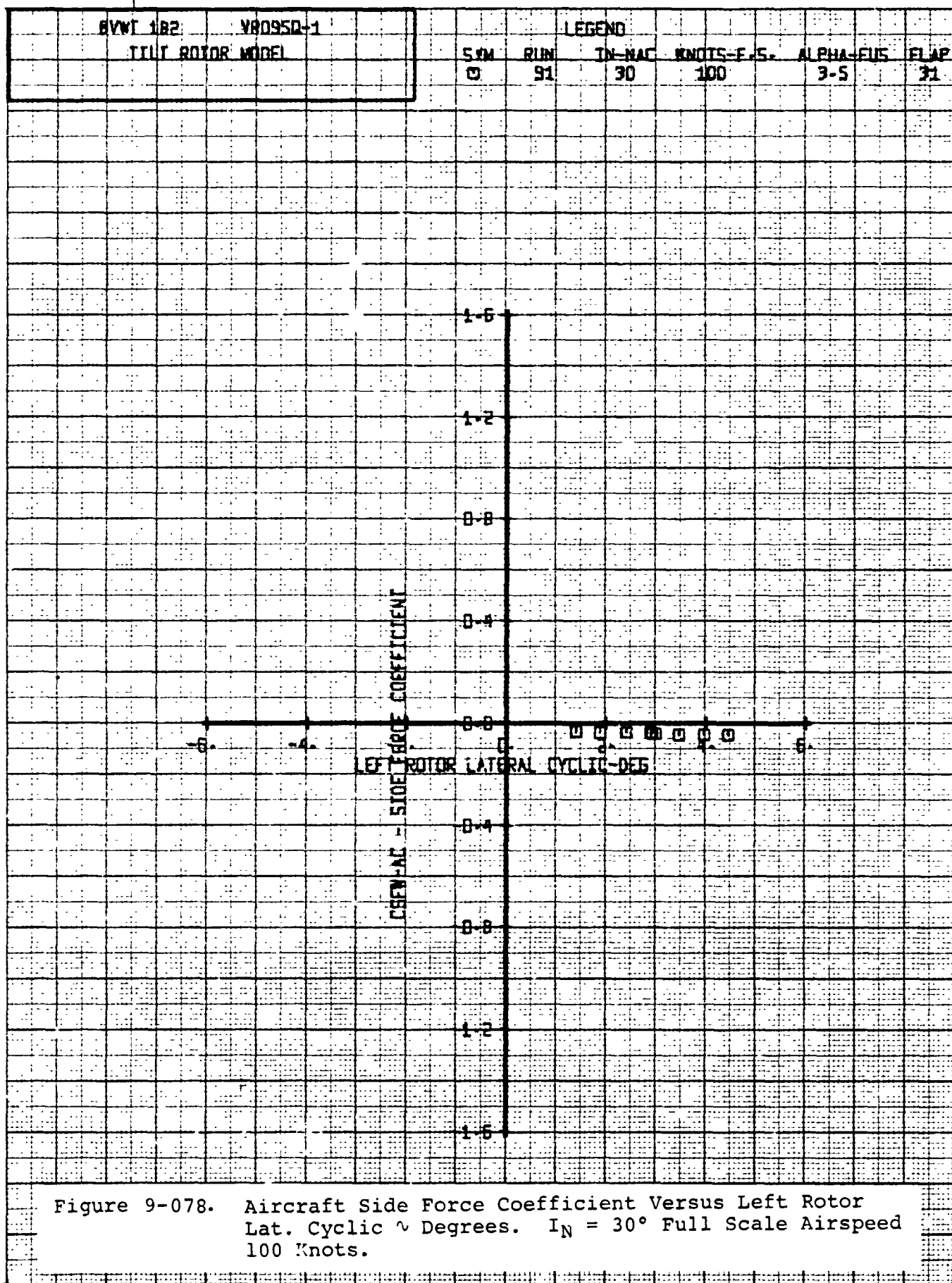


Figure 9-077. Aircraft Lift Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.



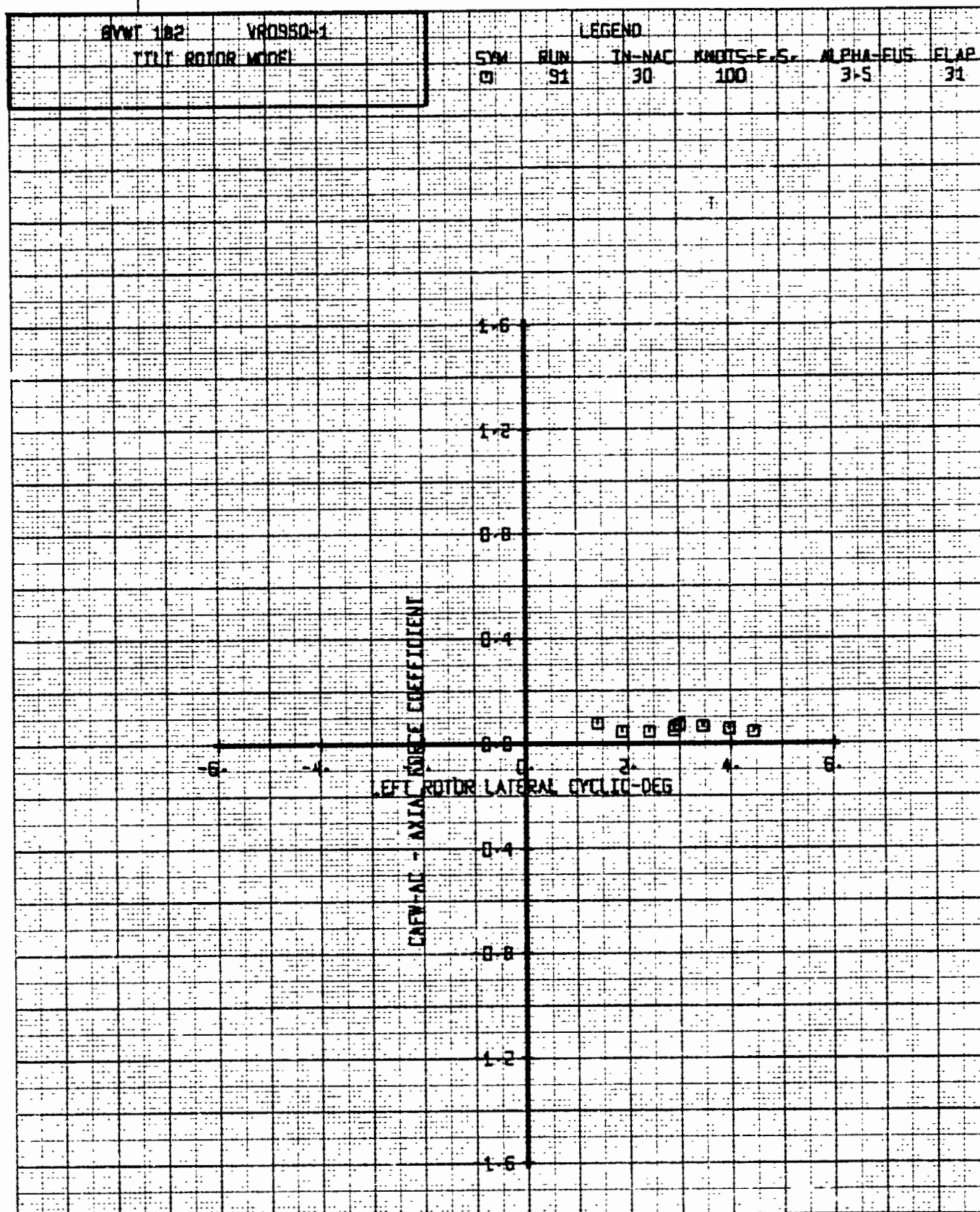
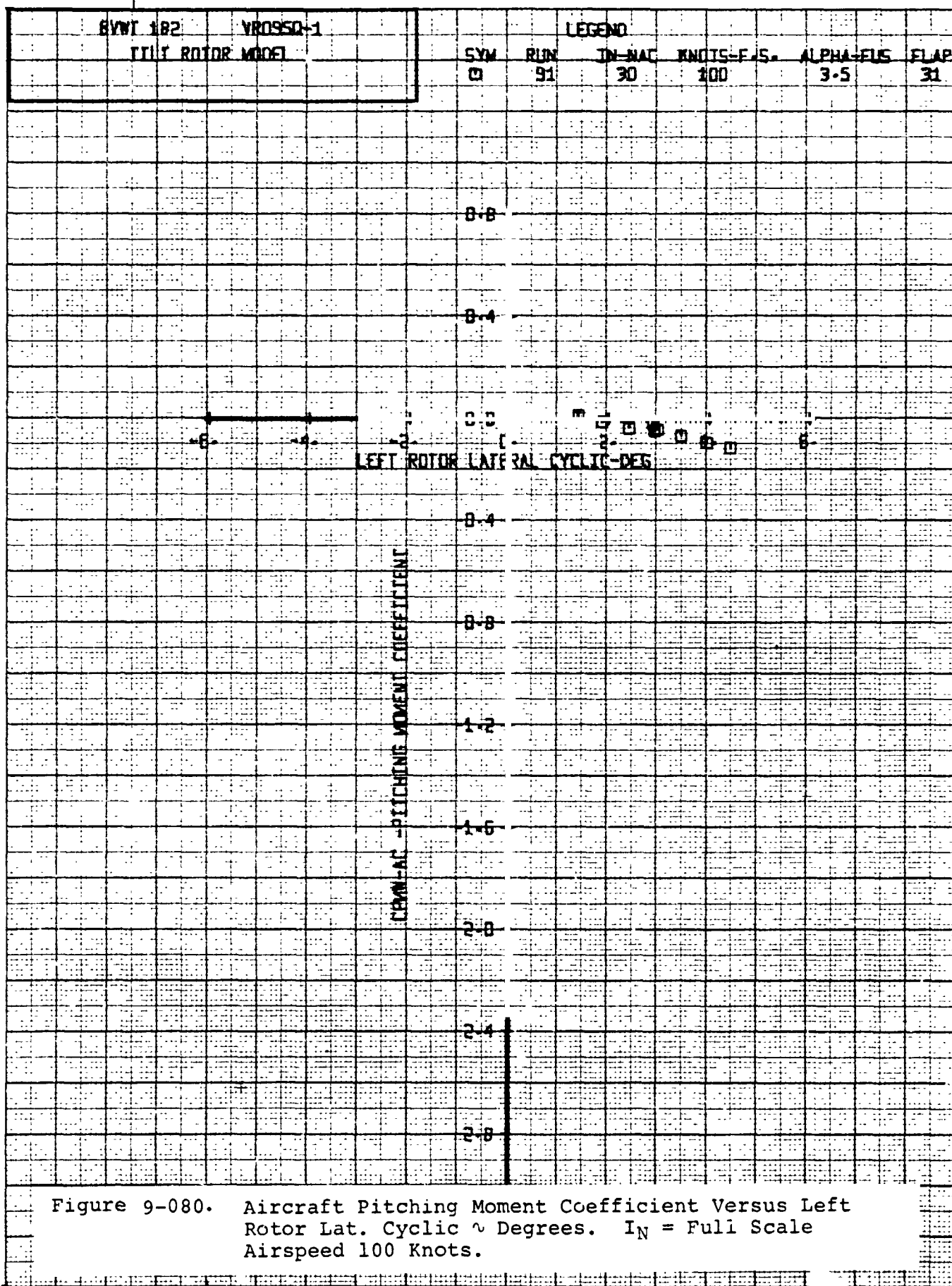


Figure 9-079. Aircraft Axial Force Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.



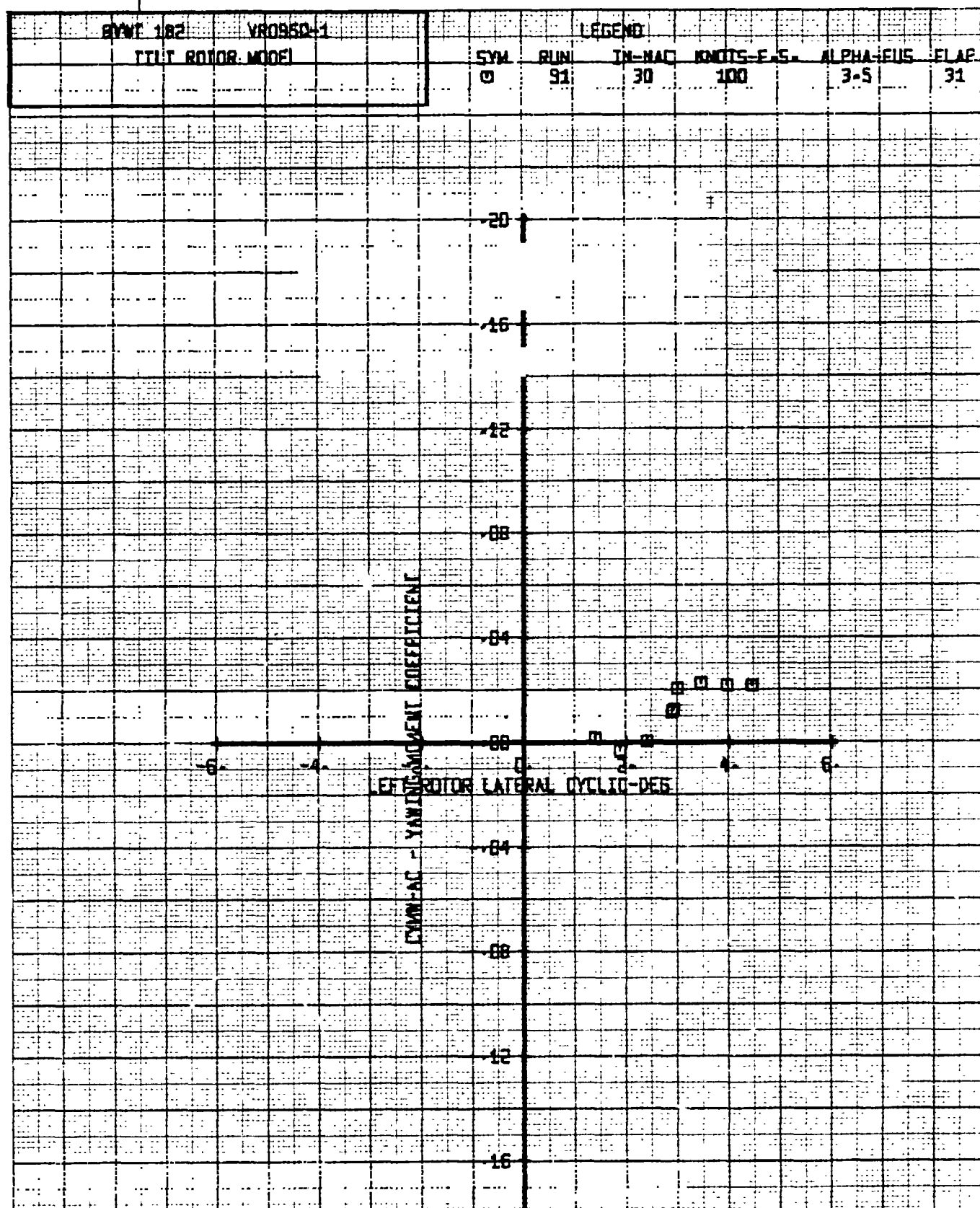
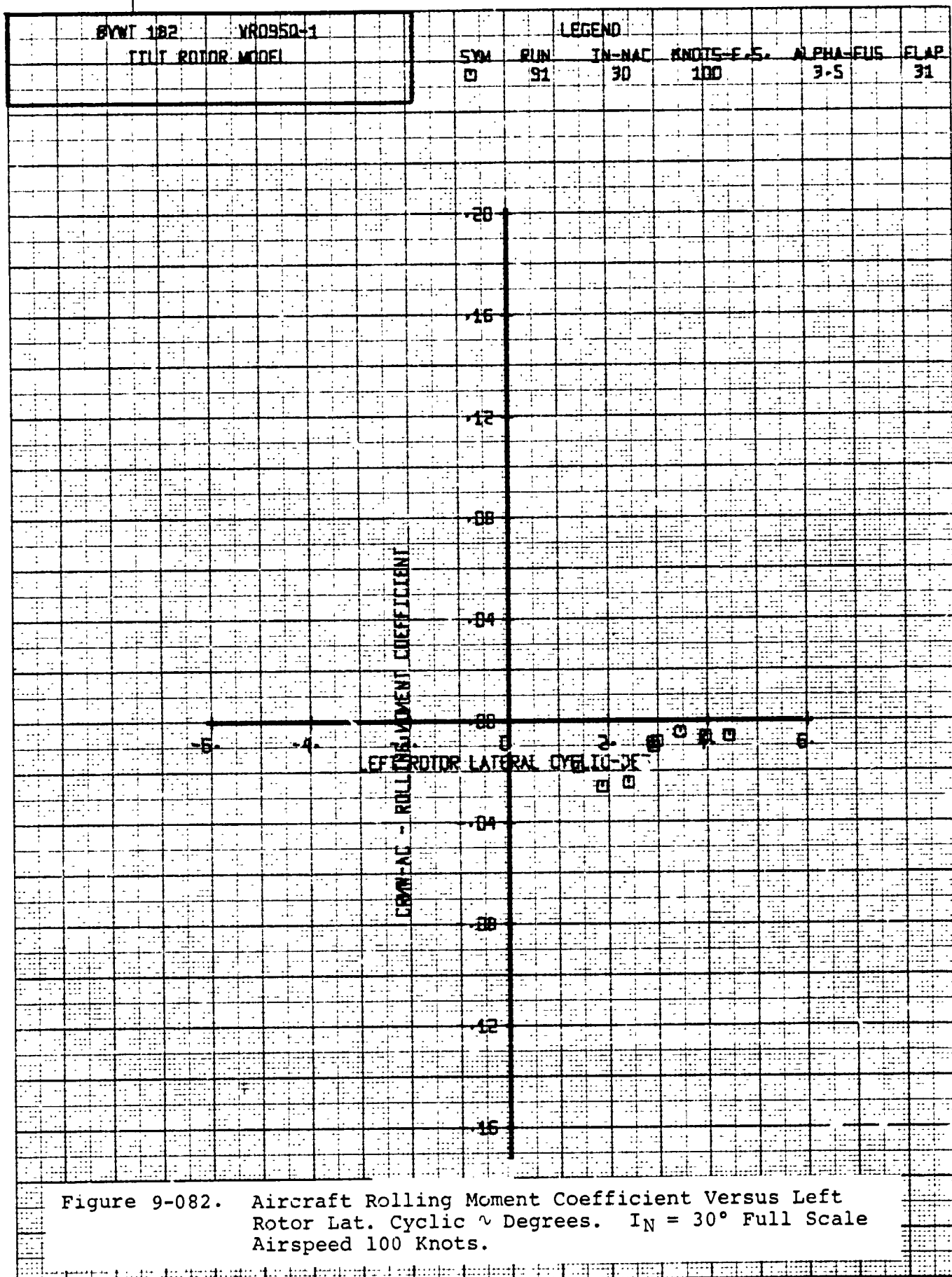


Figure 9-081. Aircraft Yawing Moment Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.



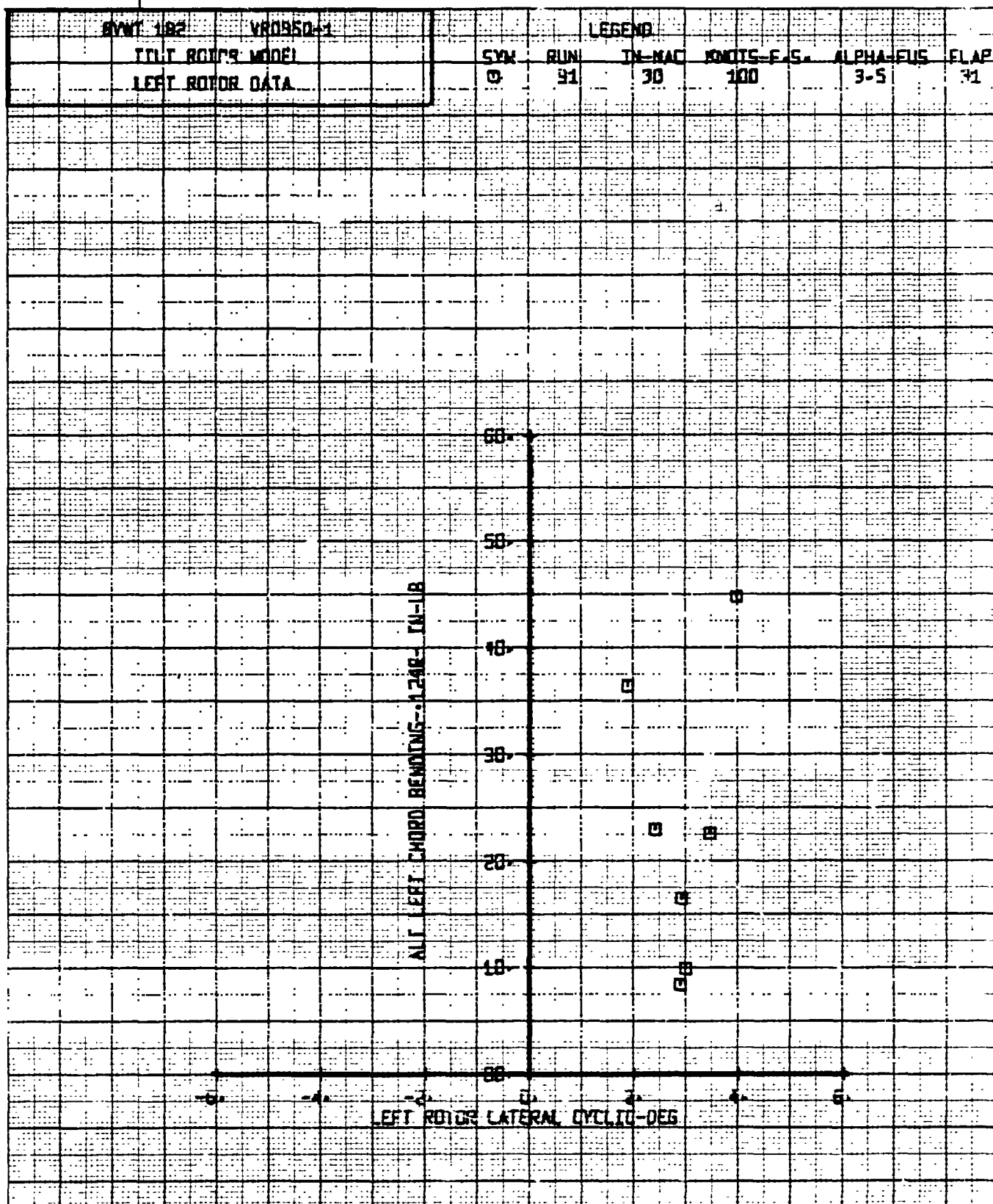
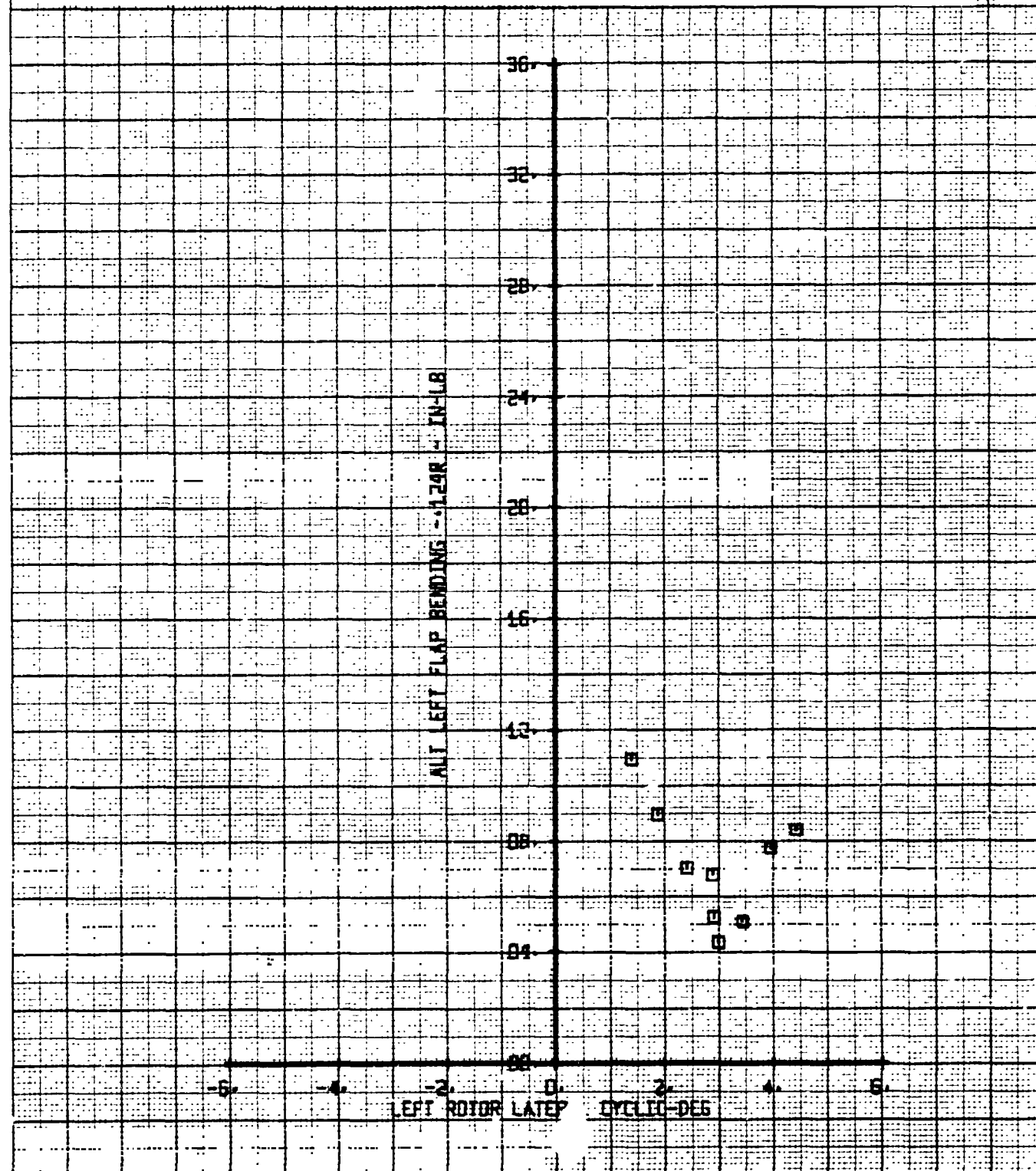
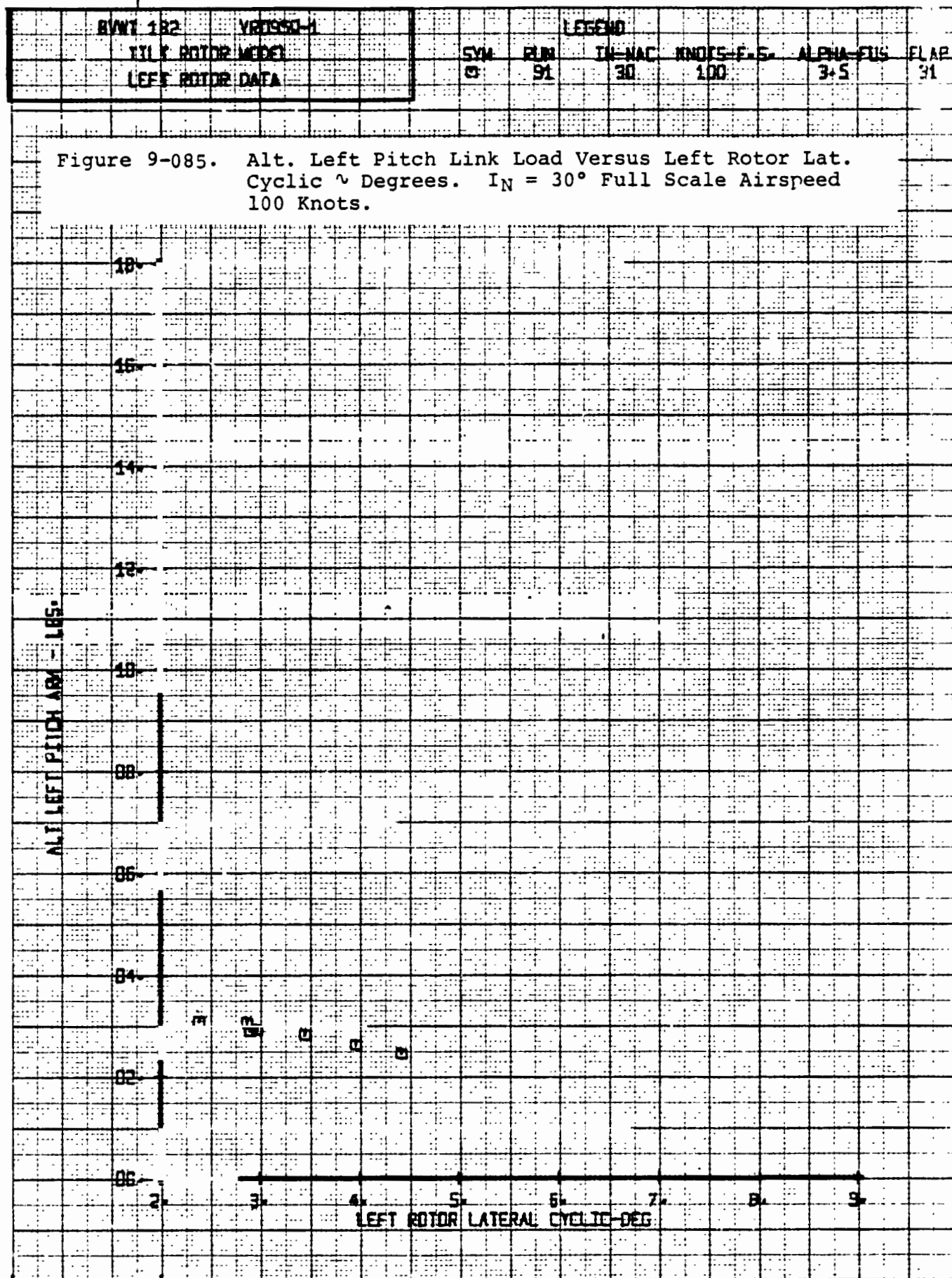


Figure 9-083. Alt. Left Chord Bending Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.

| | | | | | | | |
|-----------------|----------|--------|-----|--------|------------|-----------|------|
| BVWT 182 | VR0950-1 | LEGEND | | | | | |
| TILT ROTOR MODE | | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-EUS | FLAP |
| LEFT ROTOR DATA | | □ | 91 | 30 | 100 | 9-5 | 31 |

Figure 9-084. Alt. Left Flap Bending Versus Left Rotor Lat.
Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed
100 Knots.





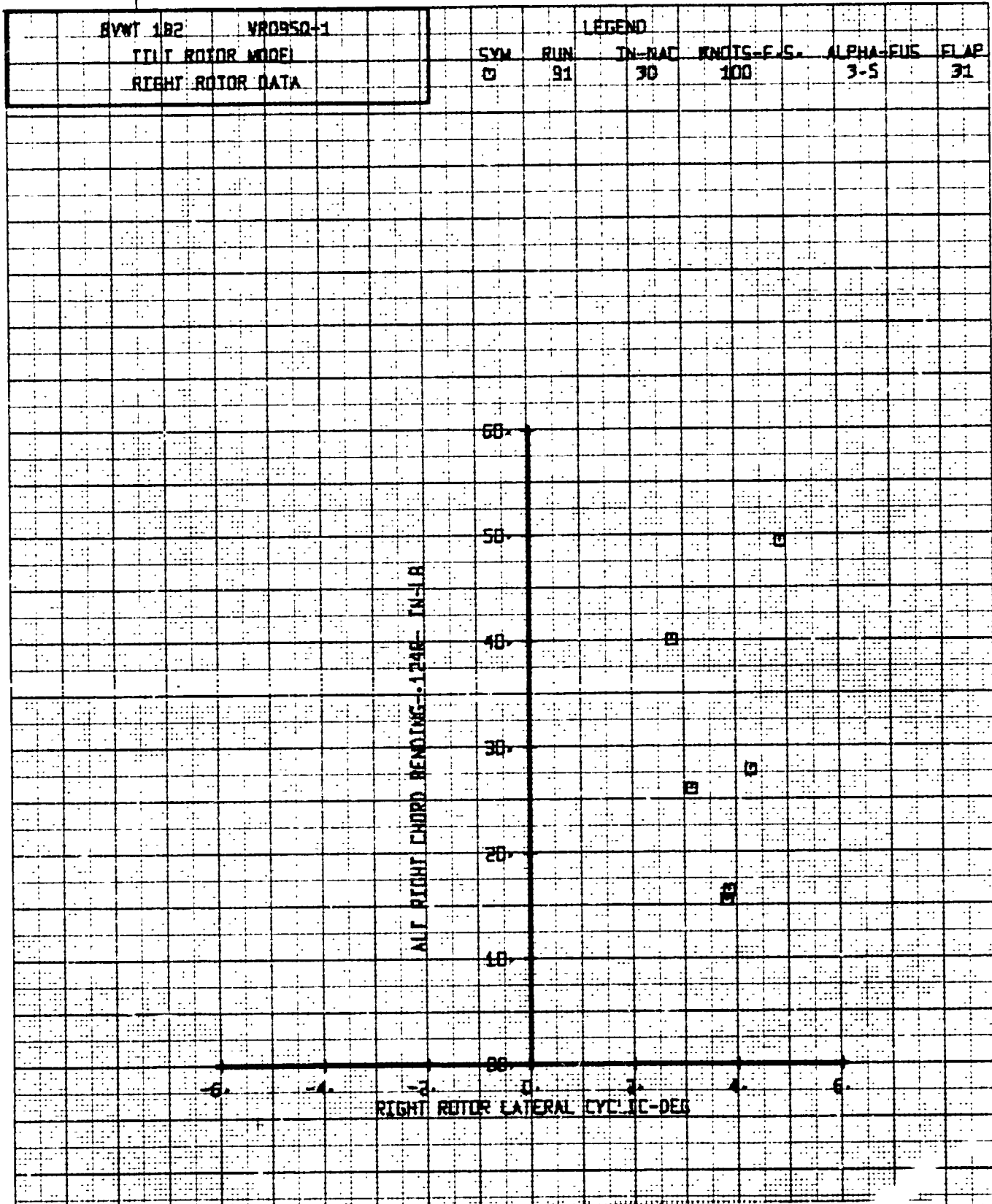
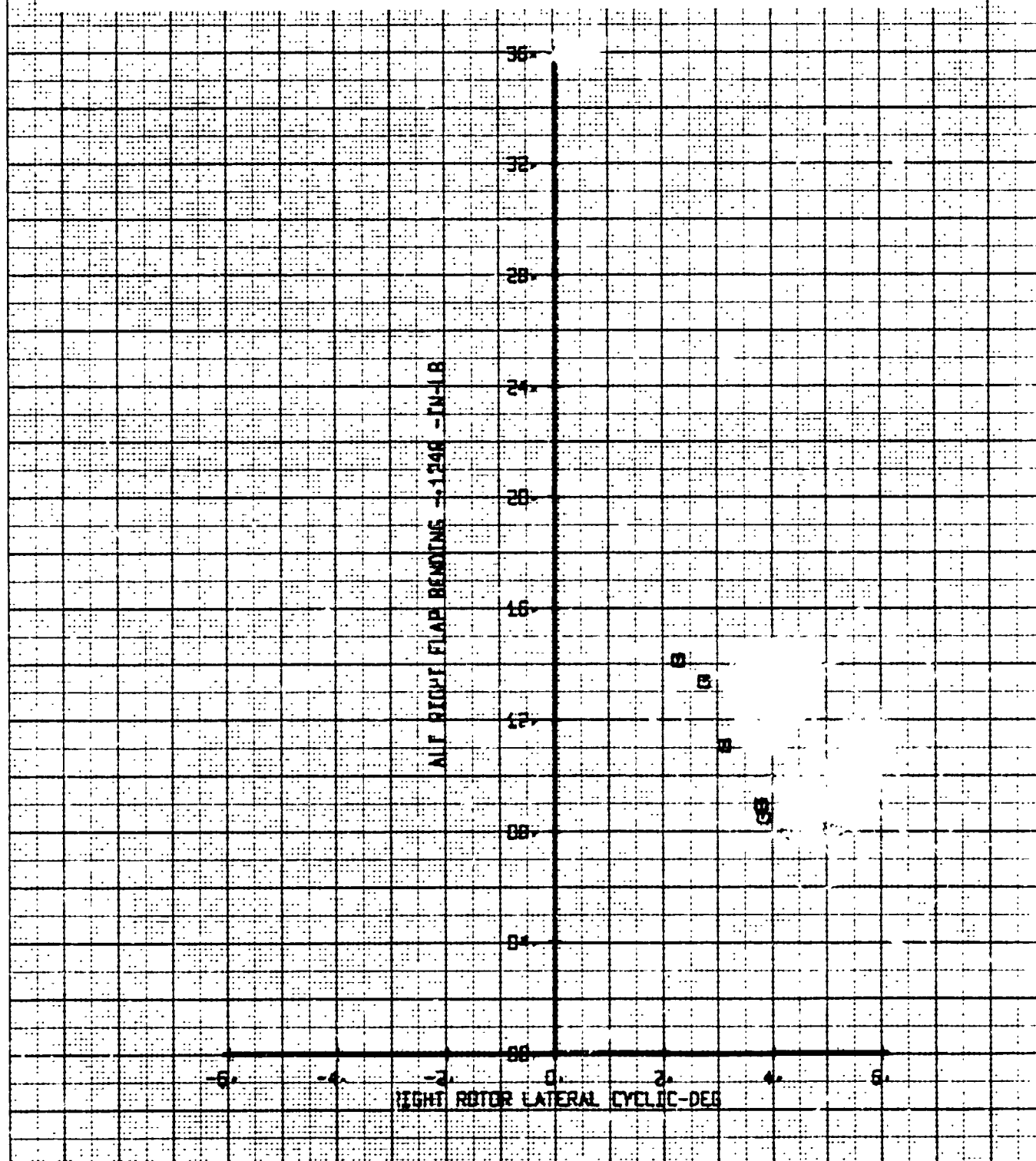


Figure 9-086. Alt. Right Chord Bending Versus Right Rotor Lat. Cyclic ~ Degrees. IN = 30° Full Scale Airspeed 100 Knots.

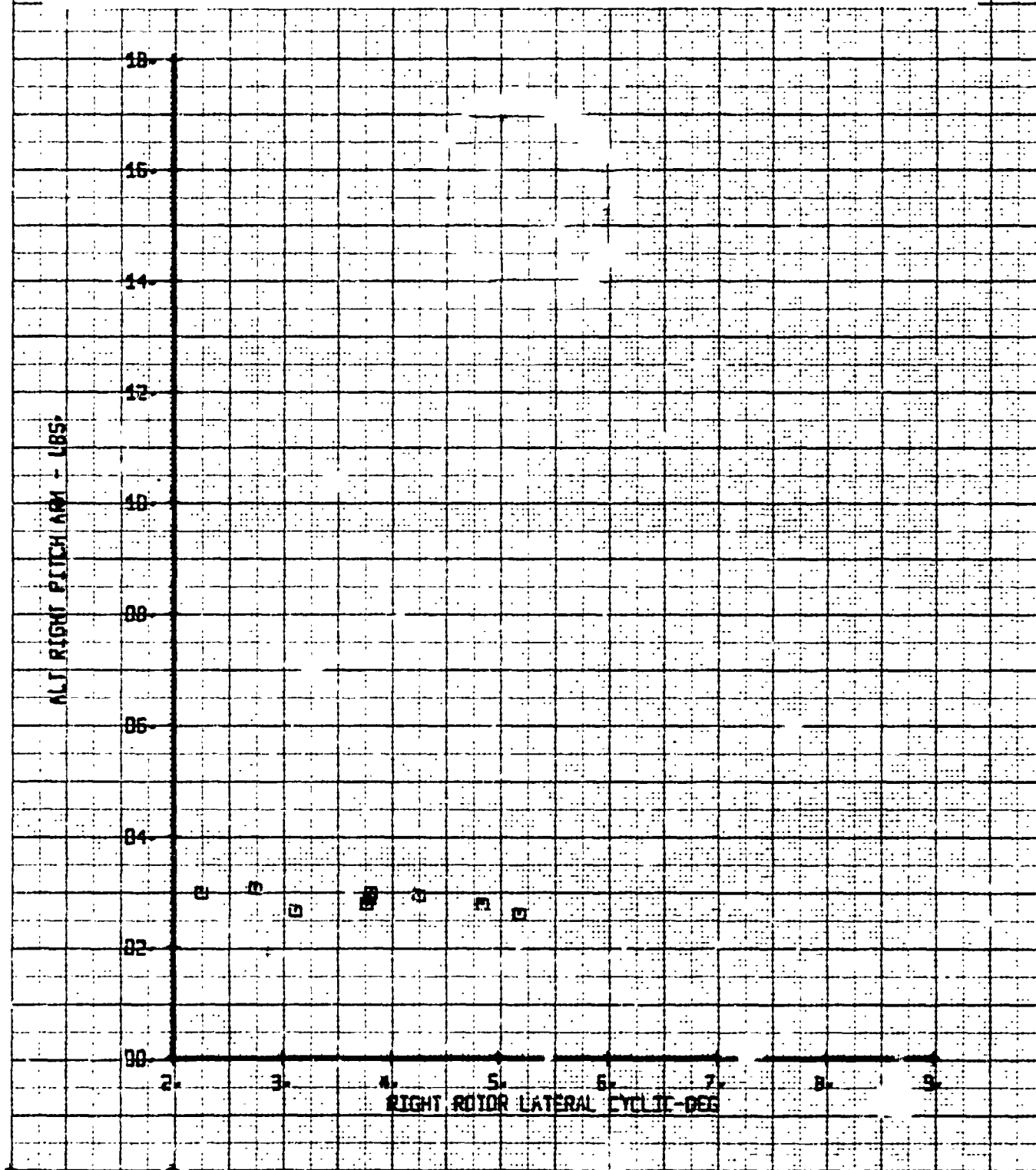
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|------------------|----------|--------|-----|--------|------------|-----------|------|--|
| SVWT 182 | VM0950-1 | LEGEND | | | | | | |
| LEFT ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FLS | FLAP | |
| RIGHT ROTOR DATA | | 0 | 91 | 30 | 100 | 3-5 | 31 | |

Figure 9-087. Alt. Right Flap Bending Versus Right Rotor Lat.
Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed
100 Knots.



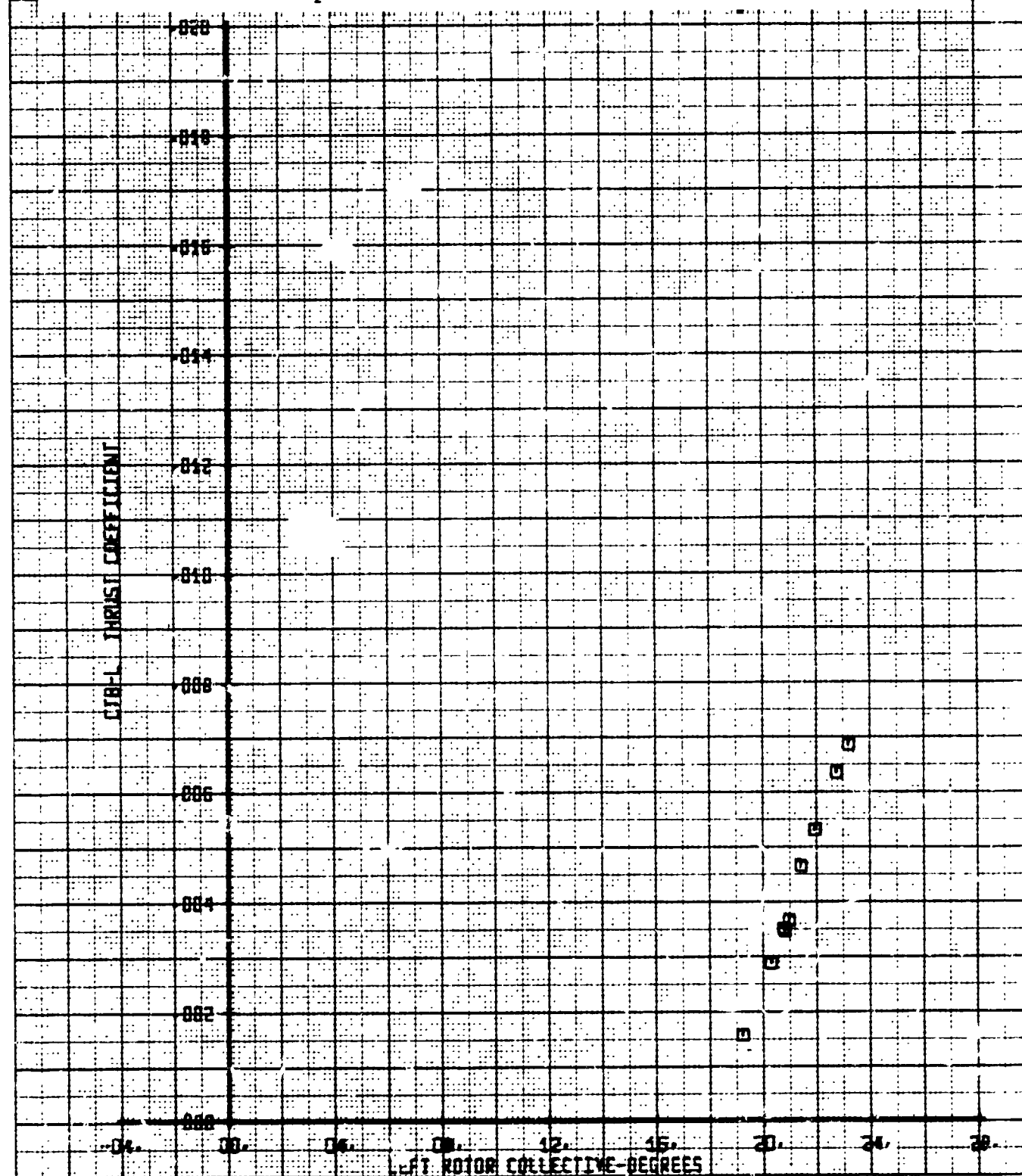
| | | | | | | |
|----------|------------------|--------|-----|--------|------------|-----------|
| BWV 182 | YR0950-1 | LEGEND | | | | |
| YR0950-1 | RIGHT ROTOR DATA | SYM | PLN | IN-NAC | KNOTS-F.S. | ALPHA-FUS |
| | | □ | 91 | 30 | 100 | 3-5 |
| | | | | | | FLAP 31 |

Figure 9-088. Alt. Right Pitch Link Load Versus Right Rotor Lat. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.



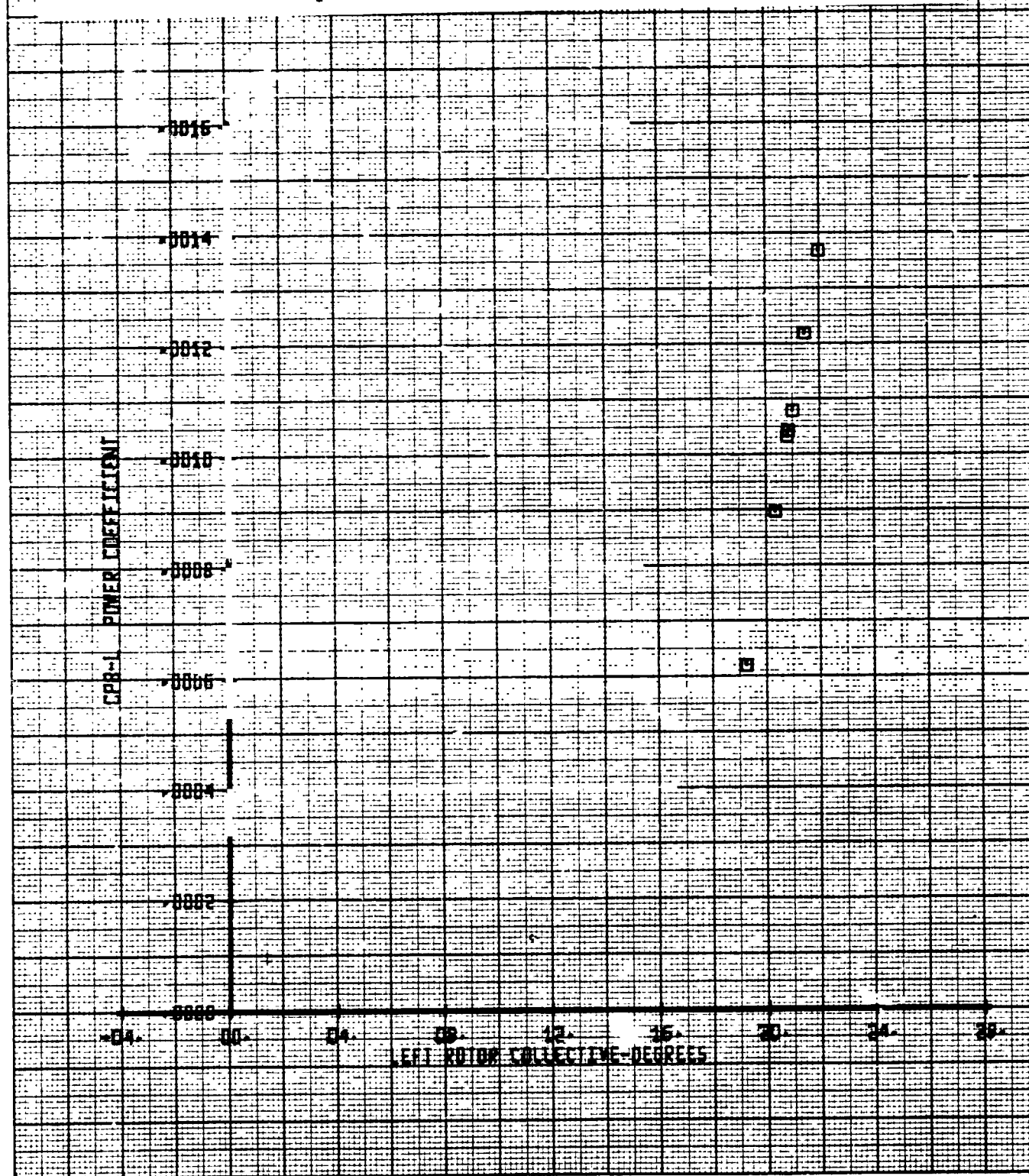
| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| AVWT 182 | VR0950-1 | LEGEND | | | | |
| IT/I ROTOR MODEL | | SYM | RUN | IN-HAC | NOTES-F.S. | ALPHA-FUS |
| LEFT ROTOR DATA | | Q | 93 | 30 | 100 | 3-5 |
| | | | | | | FLAP 31 |

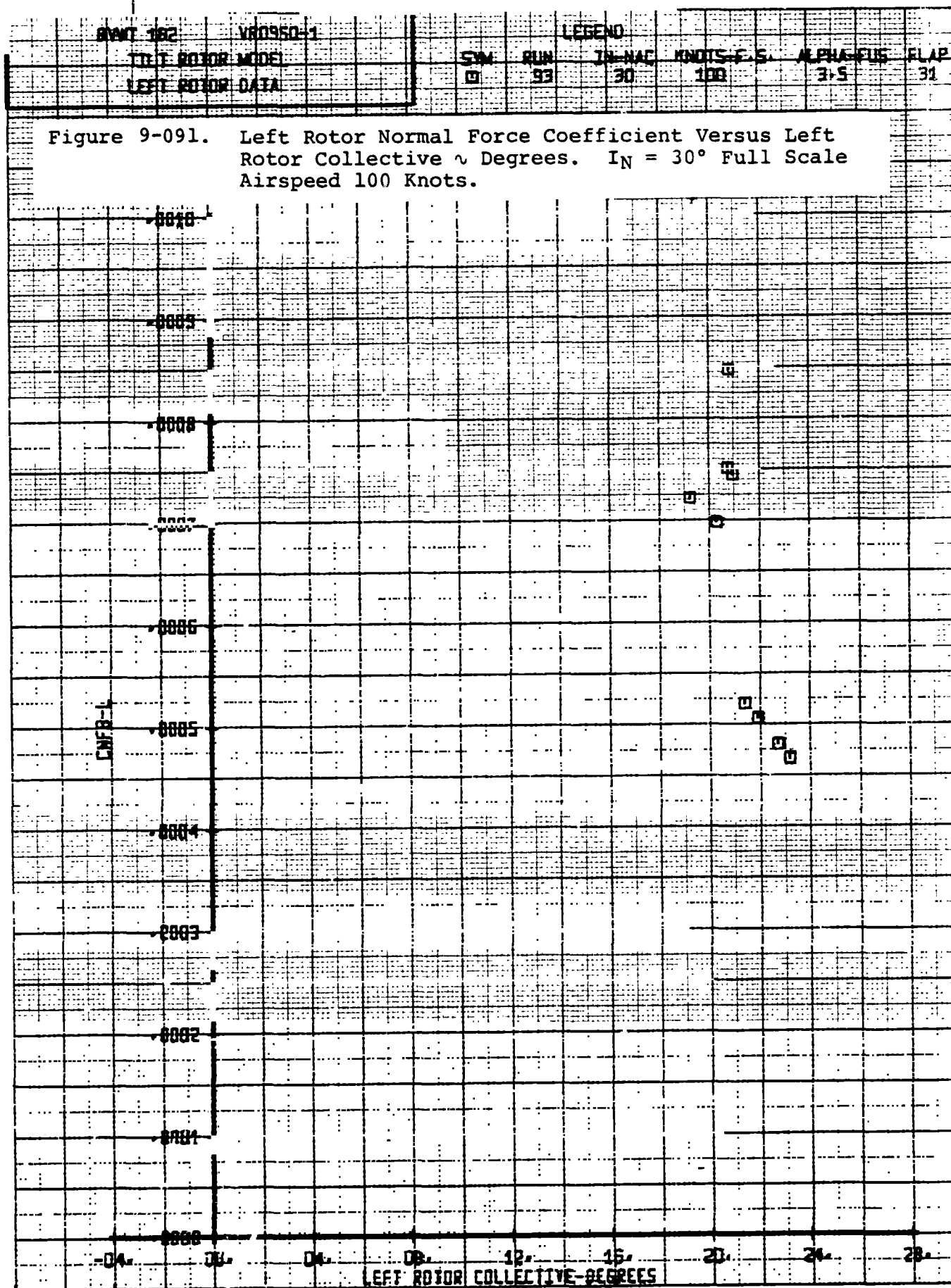
Figure 9-089. Left Rotor Thrust Coefficient Versus Left Rotor Collective γ Degrees. $J_{\gamma} = 30^{\circ}$ Full Scale
Airspeed 100 Knots.



| | | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|------|
| BVWT 182 | VR0950-1 | LEGEND | | | | | |
| LEFT ROTOR MODEL | | SW | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FUS | FLAP |
| LEFT ROTOR DATA | | 0 | 93 | 30 | 100 | 3-5 | 31 |

Figure 9-090. Left Rotor Power Coefficient Versus Left Rotor Collective α Degrees. $I_N = 30^\circ$ Full Scale
Airspeed 100 Knots.





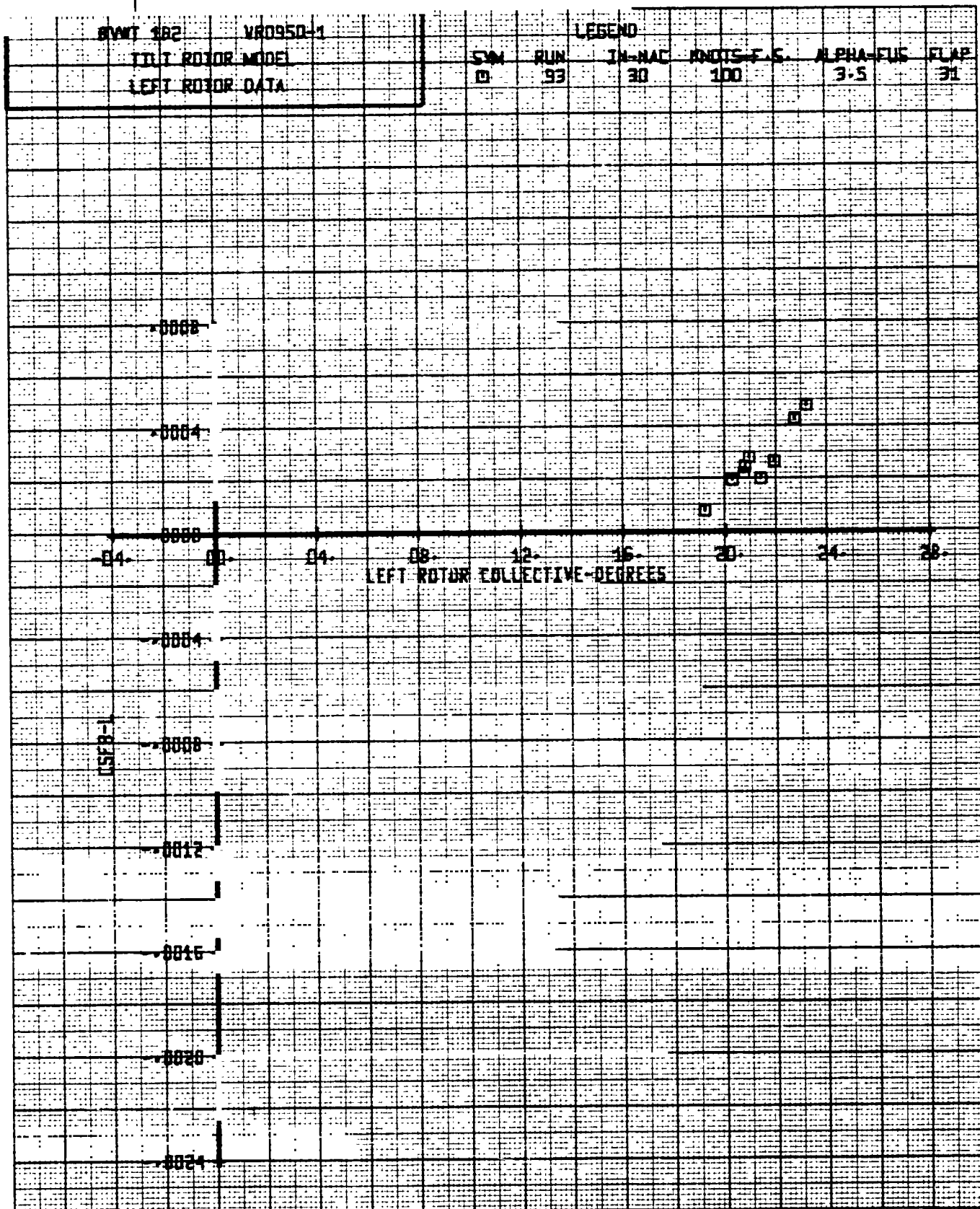


Figure 9-092. Left Rotor Side Force Coefficient Versus Left Rotor Collective ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.

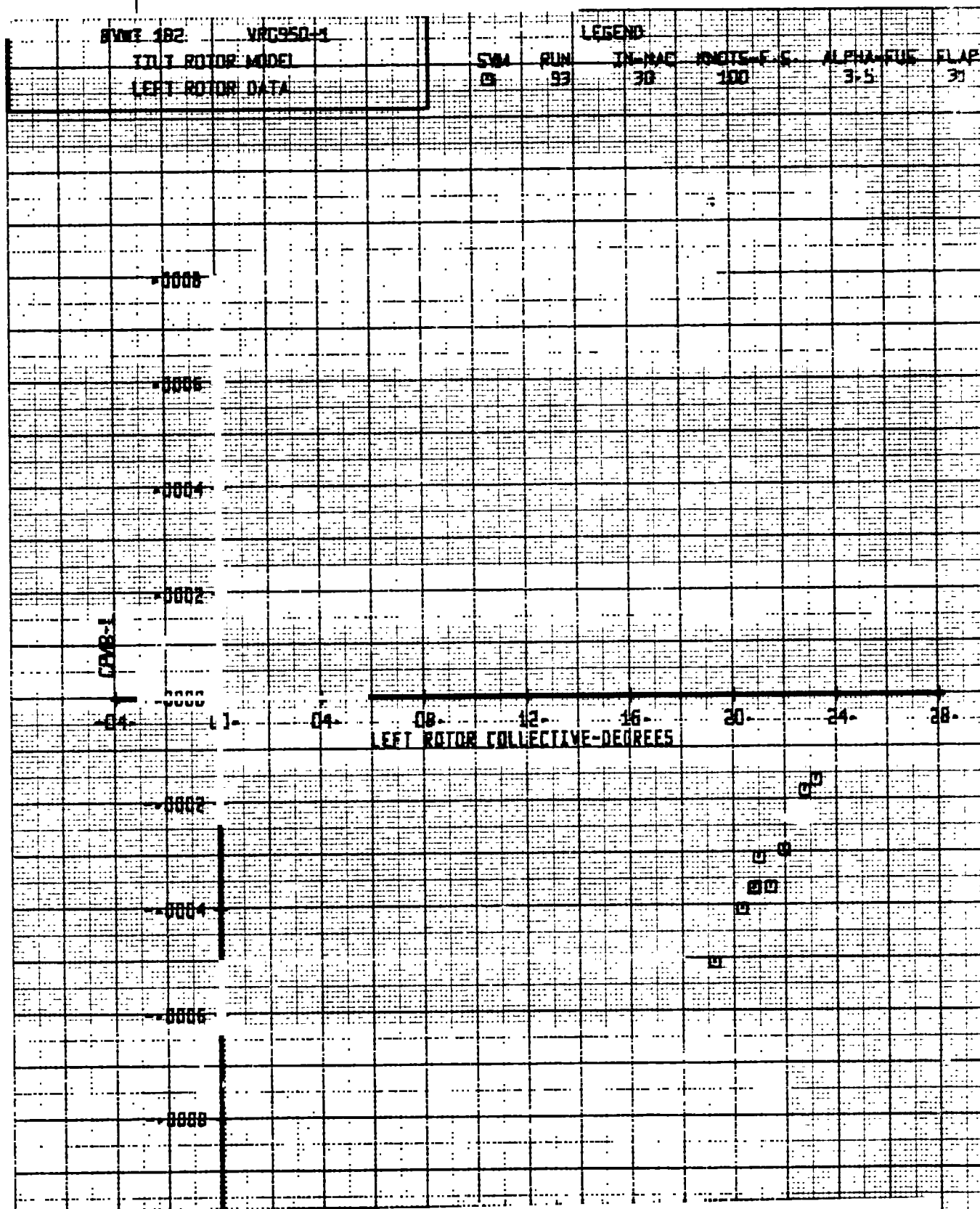
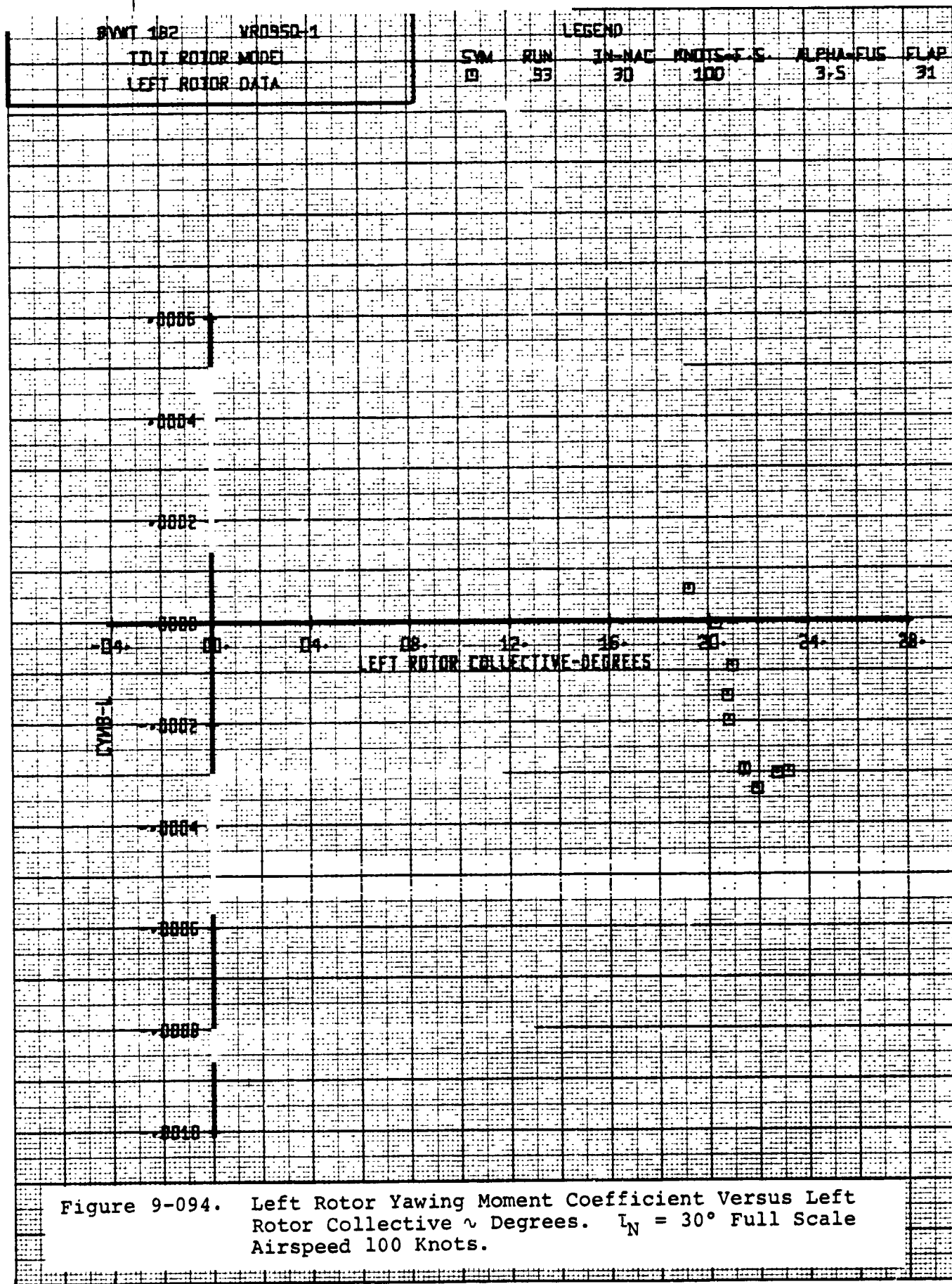
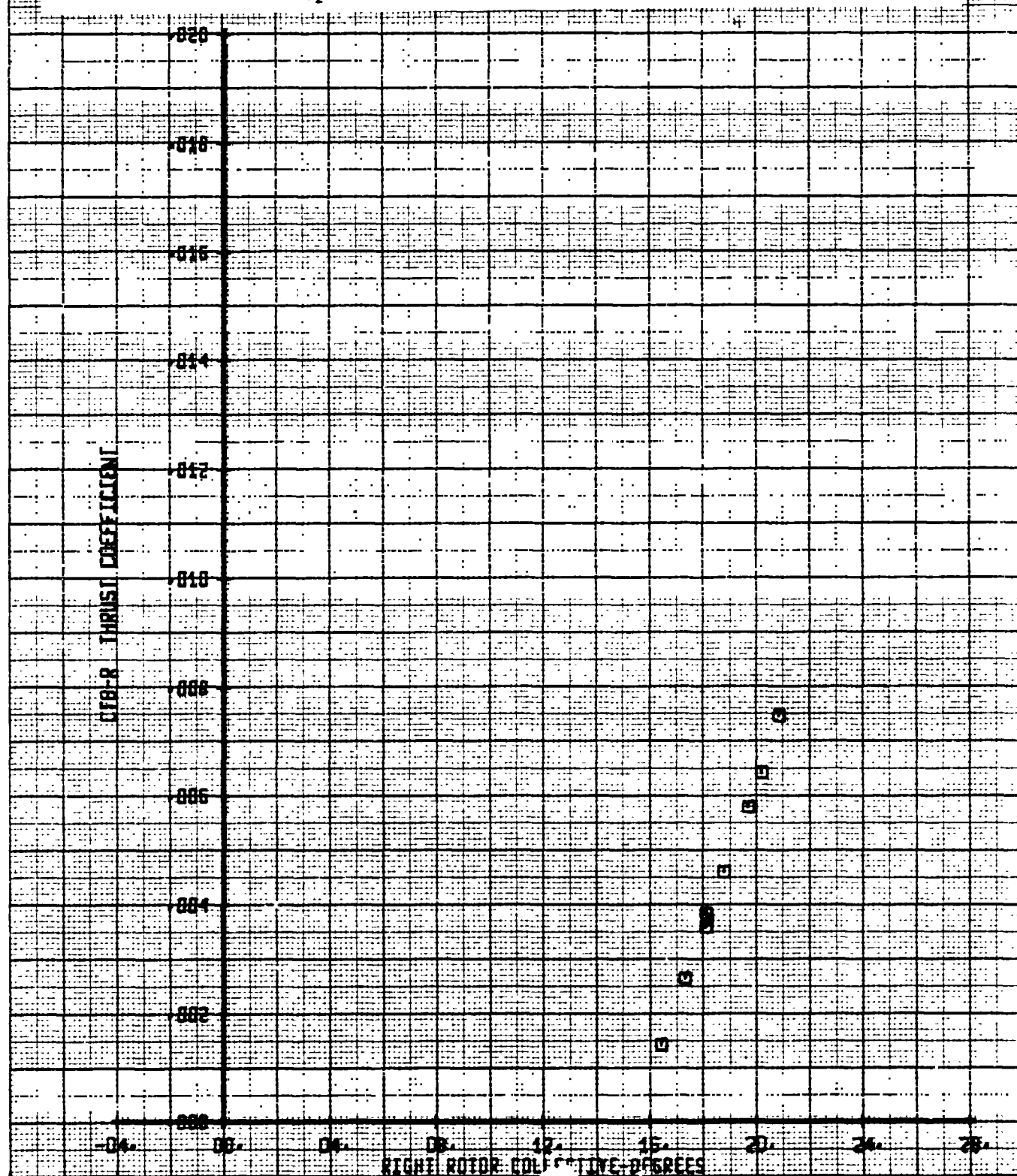


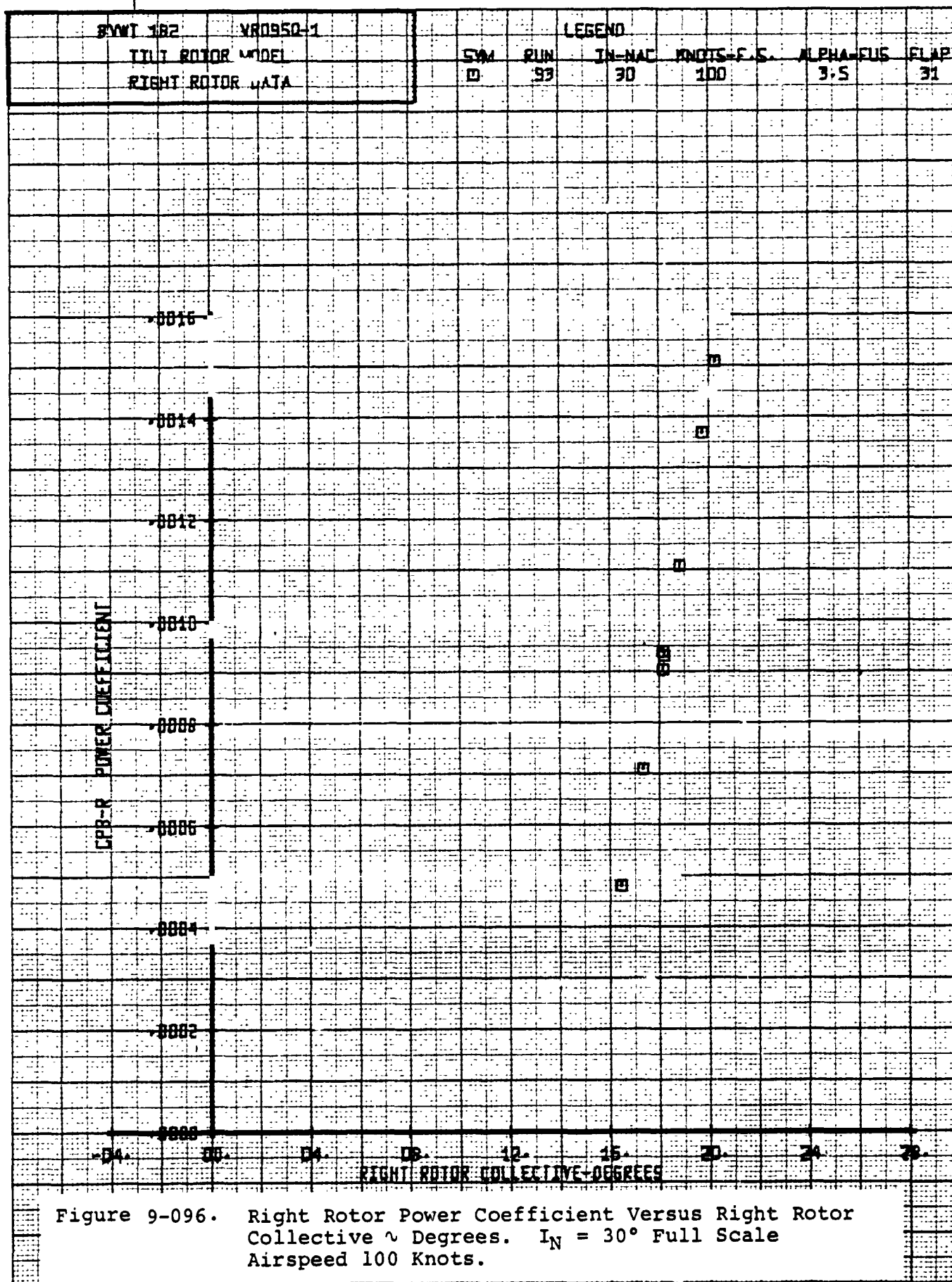
Figure 9-093. Left Rotor Pitching Moment Coefficient Versus Left Rotor Collective α Degrees. $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.



| | | | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|------|--|
| BVWT 182 | VR0950-1 | LEGEND | | | | | | |
| TDI ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FUS | FLAP | |
| RIGHT ROTOR DATA | | □ | 93 | 30 | 100 | 3.5 | 31 | |

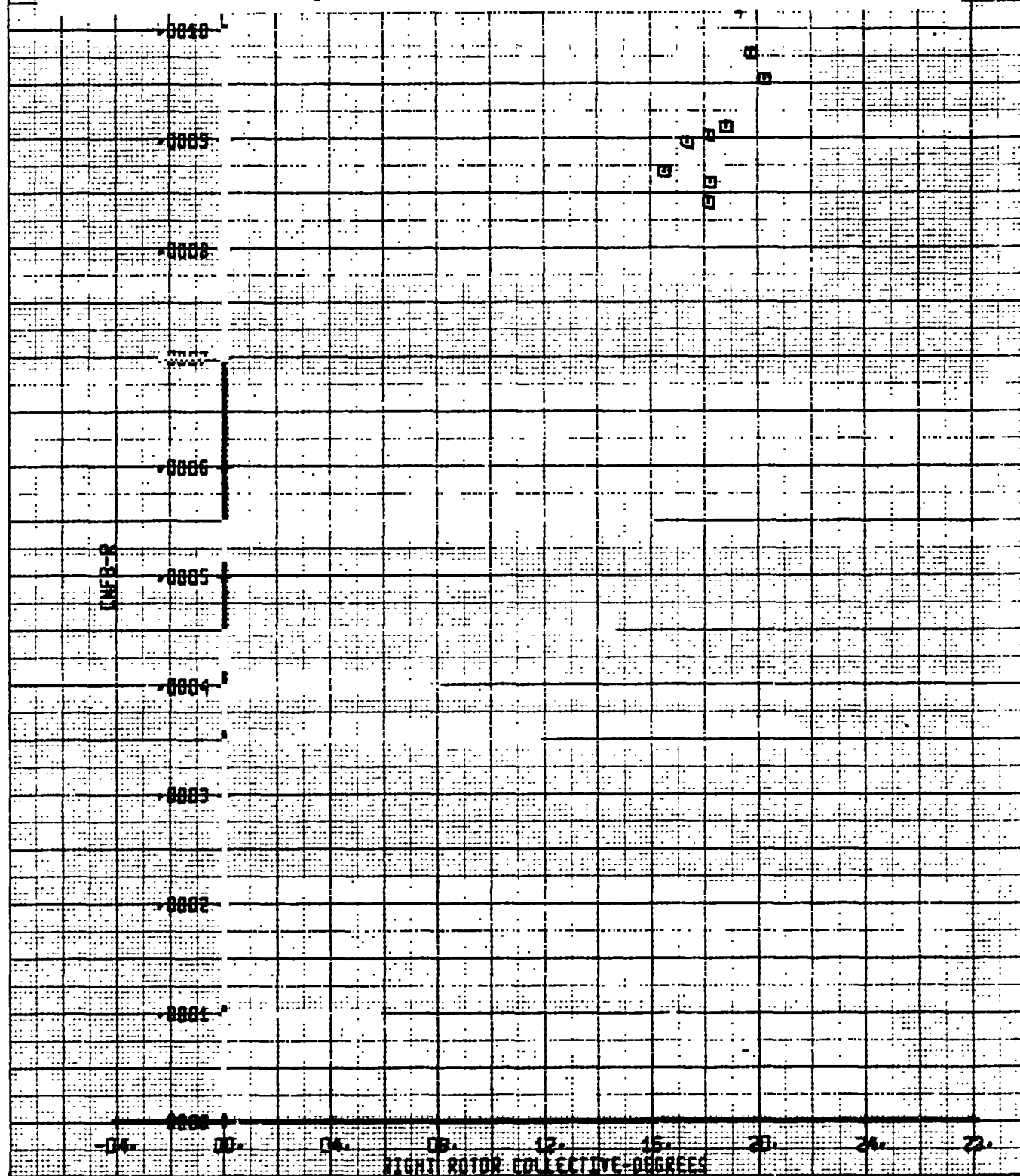
Figure 9-095. Right Rotor Thrust Coefficient Versus Right Rotor Collective α Degrees. $I_N = 30^\circ$ Full Scale
Airspeed 100 Knots.





| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BYWT 182 | VR0950-1 | LEGEND | | | | |
| TDI ROTOR MODE | | SYM | RUN | IN-HAC | KNOTS-F.S. | ALPHA-FUS |
| RIGHT ROTOR DATA | | D | 93 | 30 | 100 | 3.5 |
| | | | | | | FLAP 31 |

Figure 9-097. Right Rotor Normal Force Coefficient Versus Right Rotor Collective γ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.

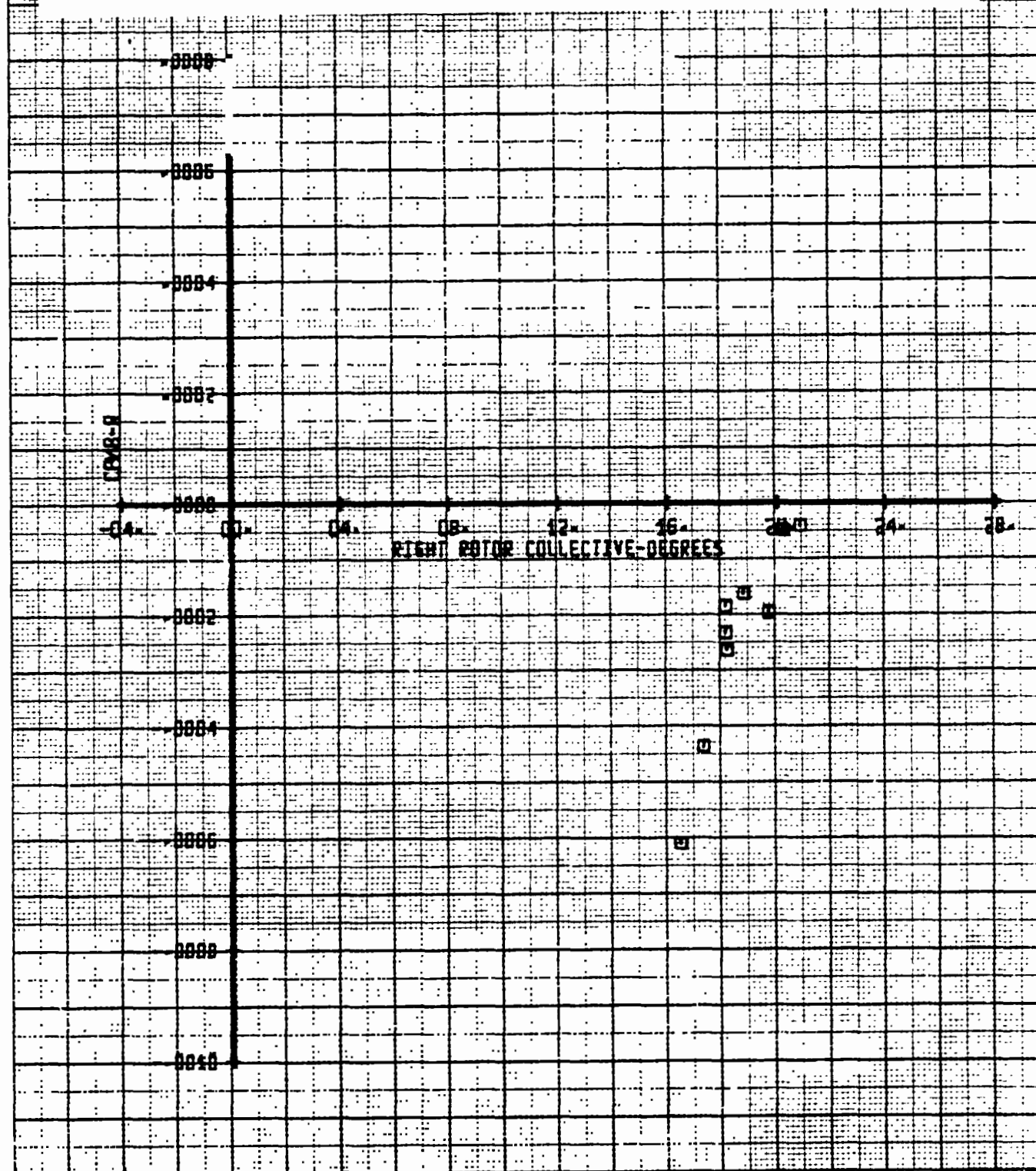


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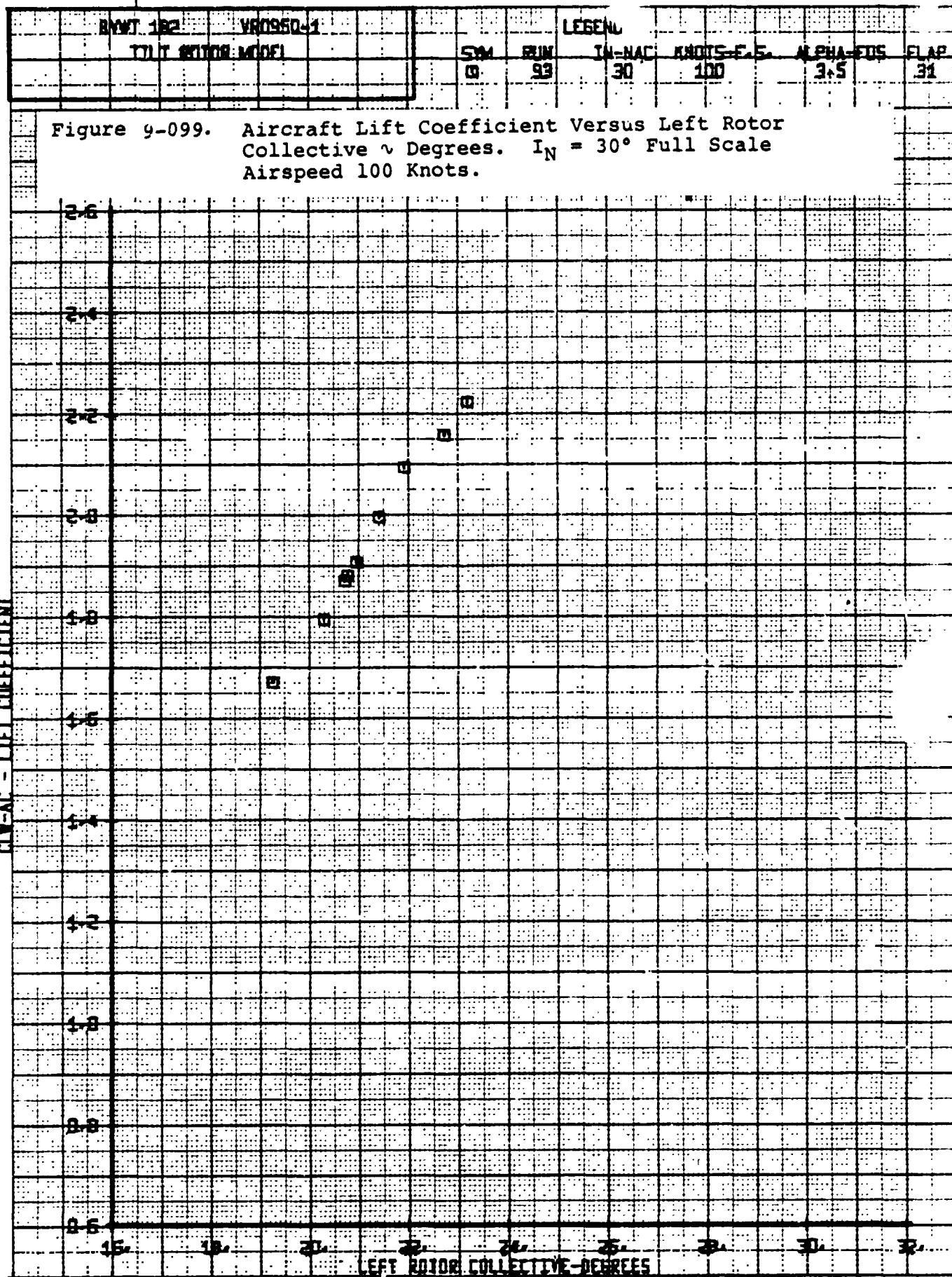
| | | | | | | |
|----------|------------------|--------|-----|--------|------------|-----------|
| BYWT 182 | YR0950-1 | LEGEND | | | | |
| YR0950-1 | RIGHT ROTOR DATA | SYM | RUM | IN-MAC | KNOTS-F.S. | ALPHA-FUS |
| | | Q | 93 | 30 | 100 | 3.5 |
| | | | | | | FLAP |
| | | | | | | 31 |

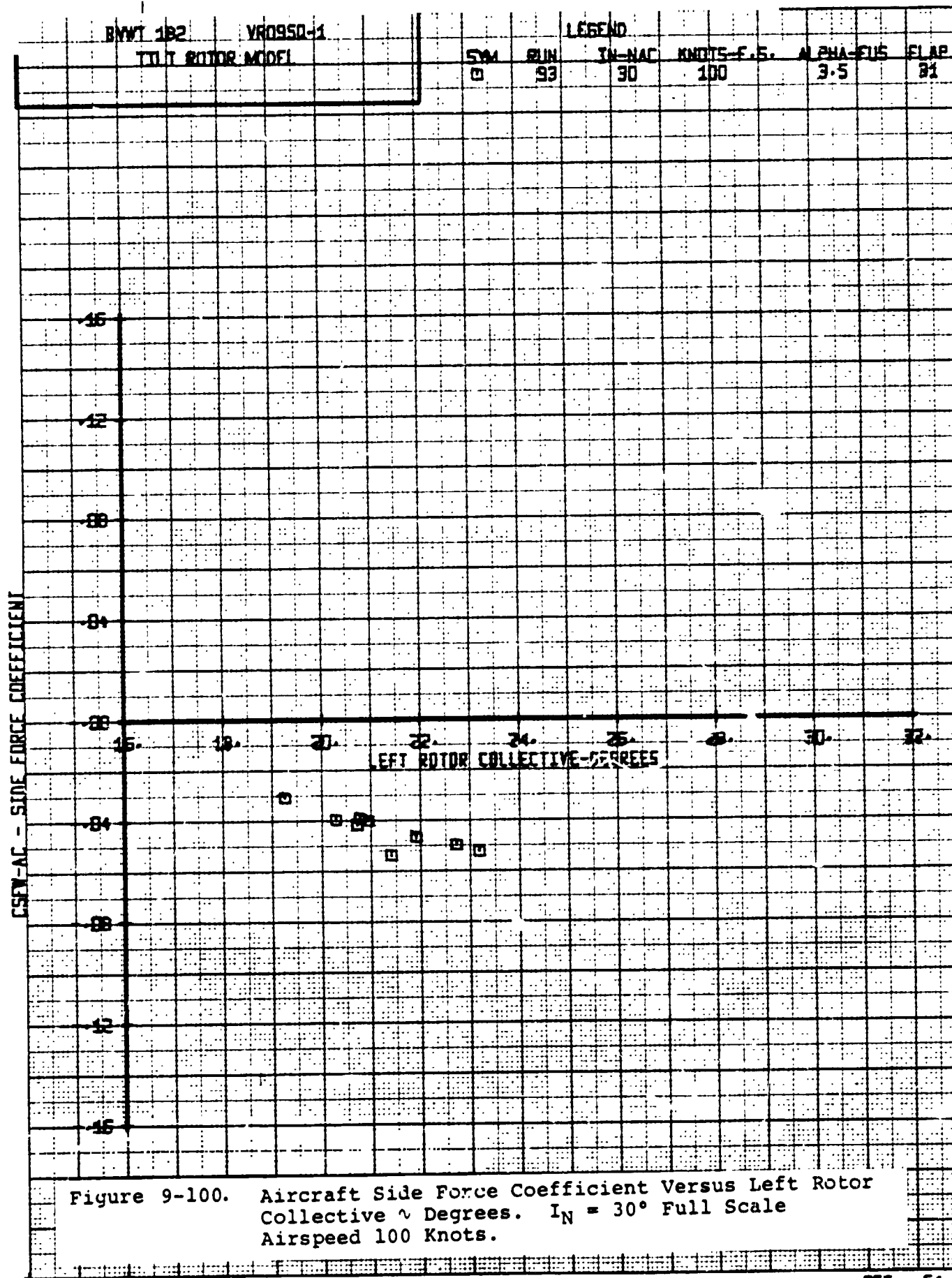
Figure 9-098. Right Rotor Pitching Moment Coefficient Versus Right Rotor Collective α Degrees. $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.

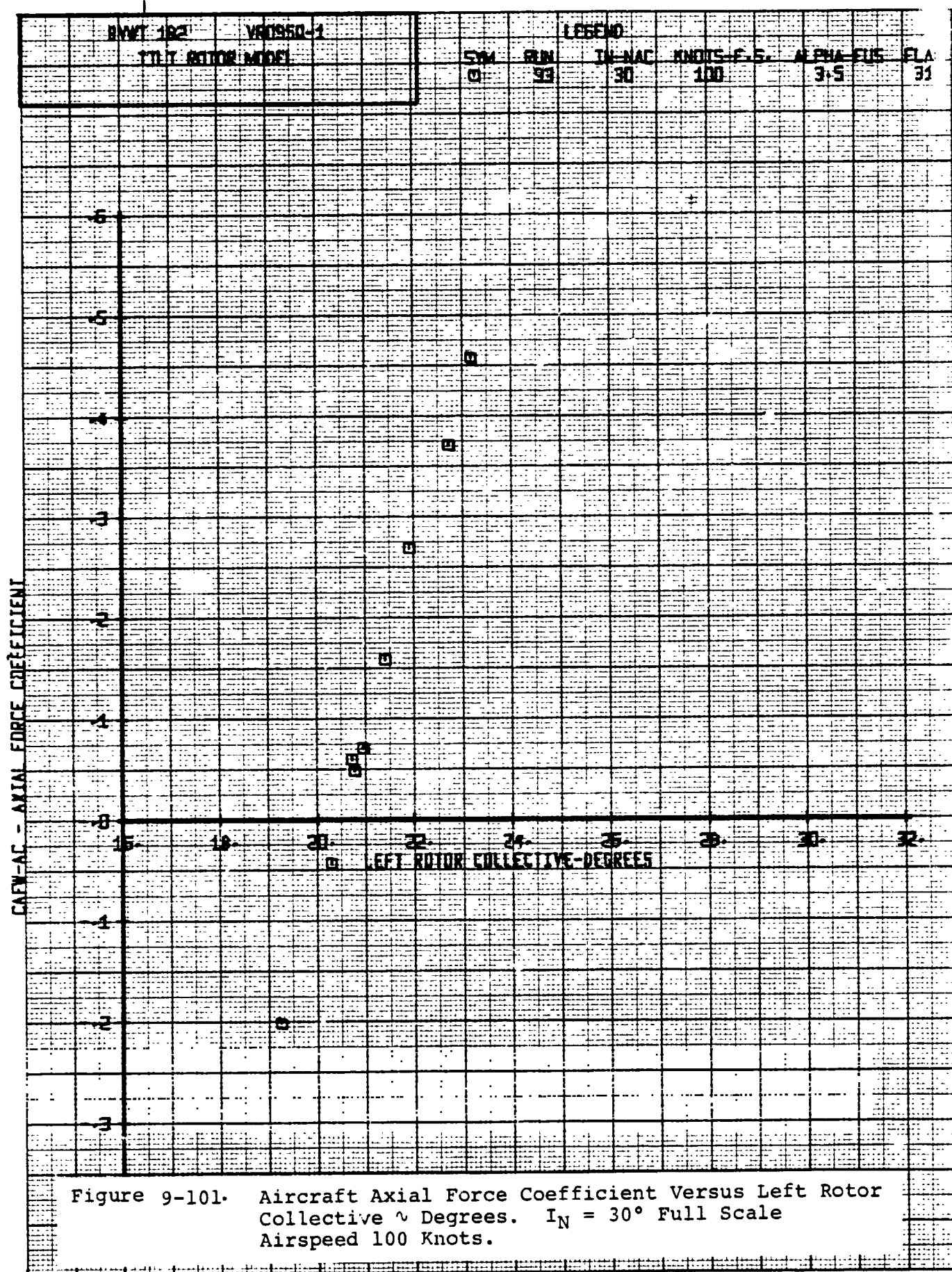


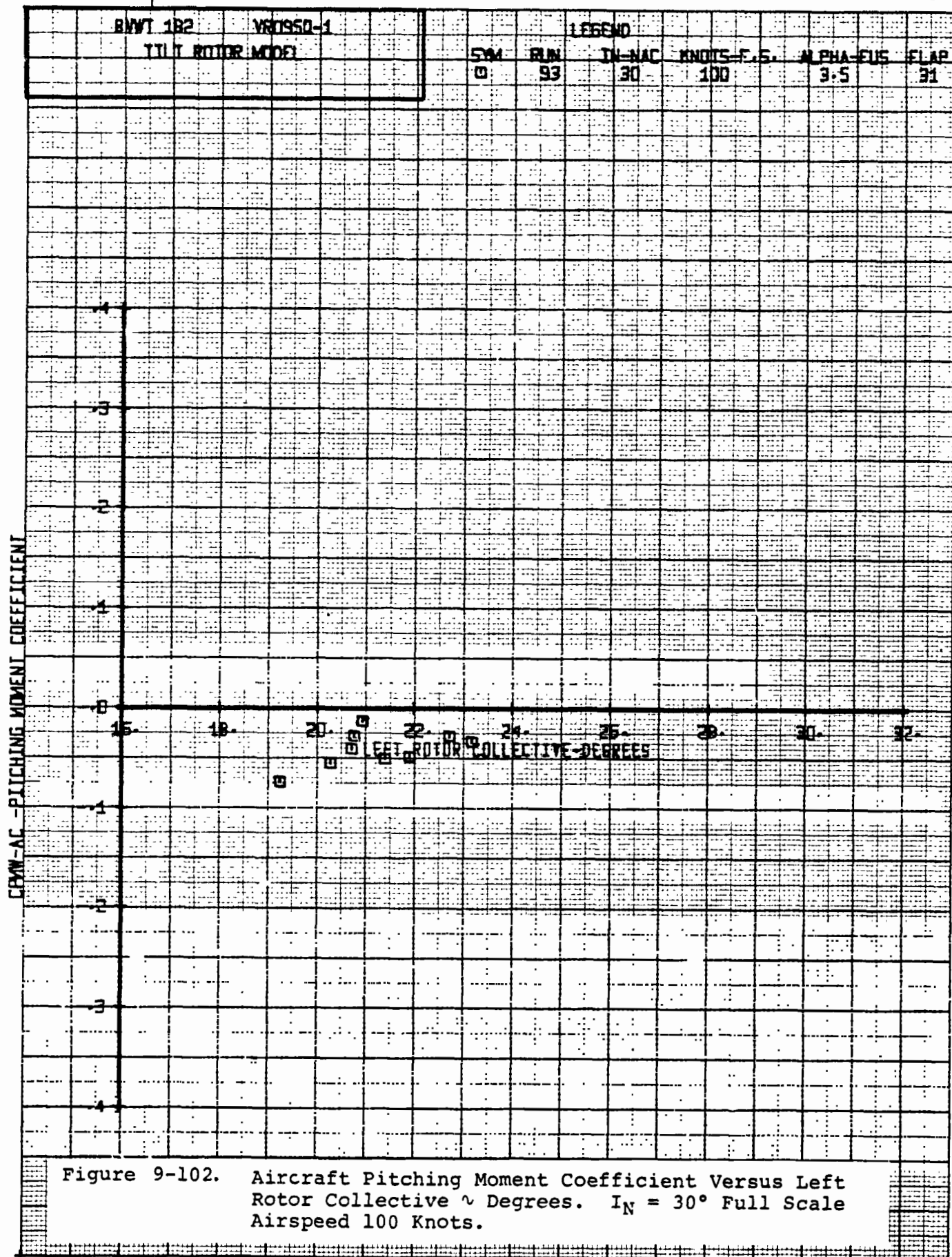
D238-10000-3

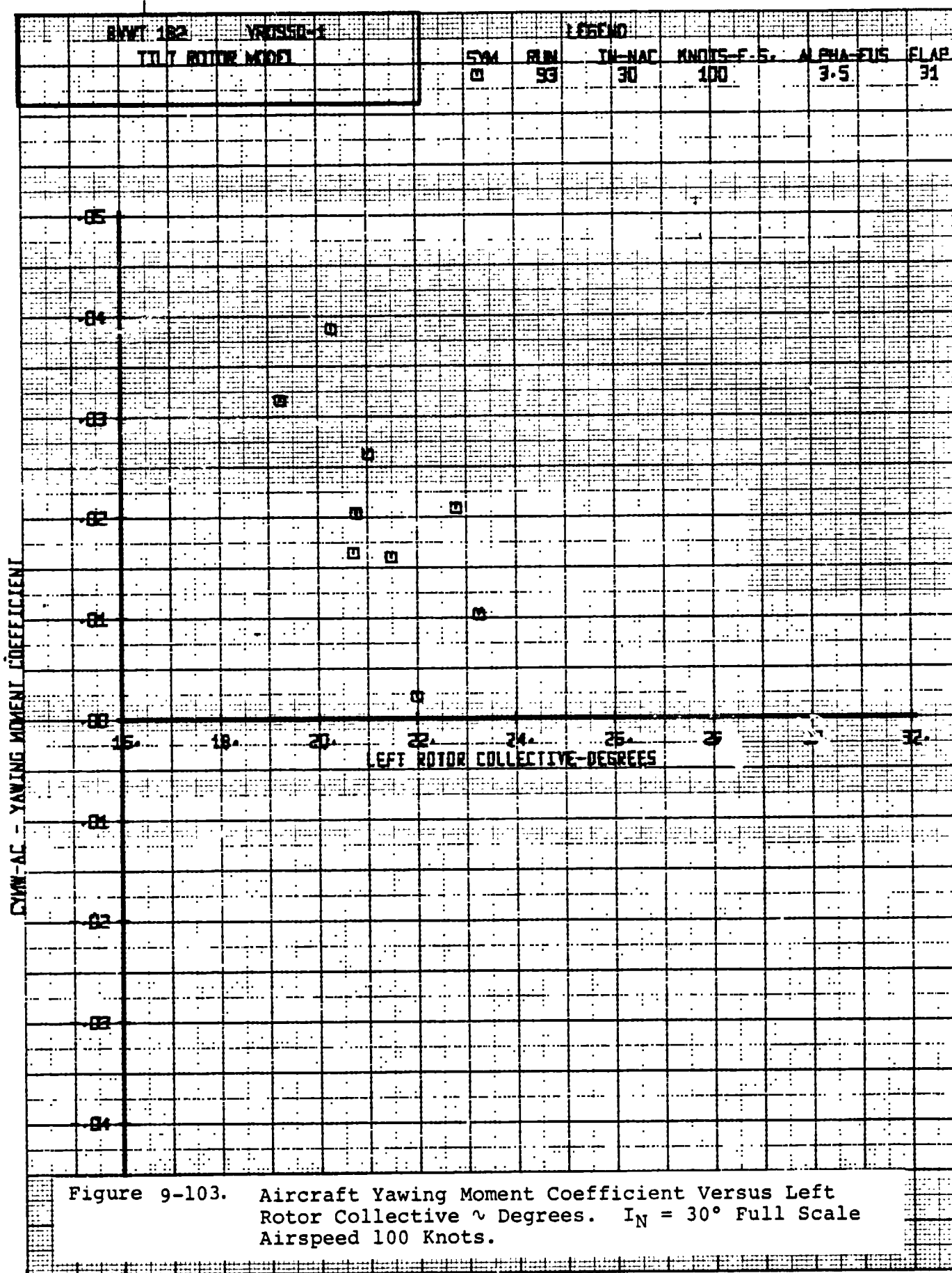
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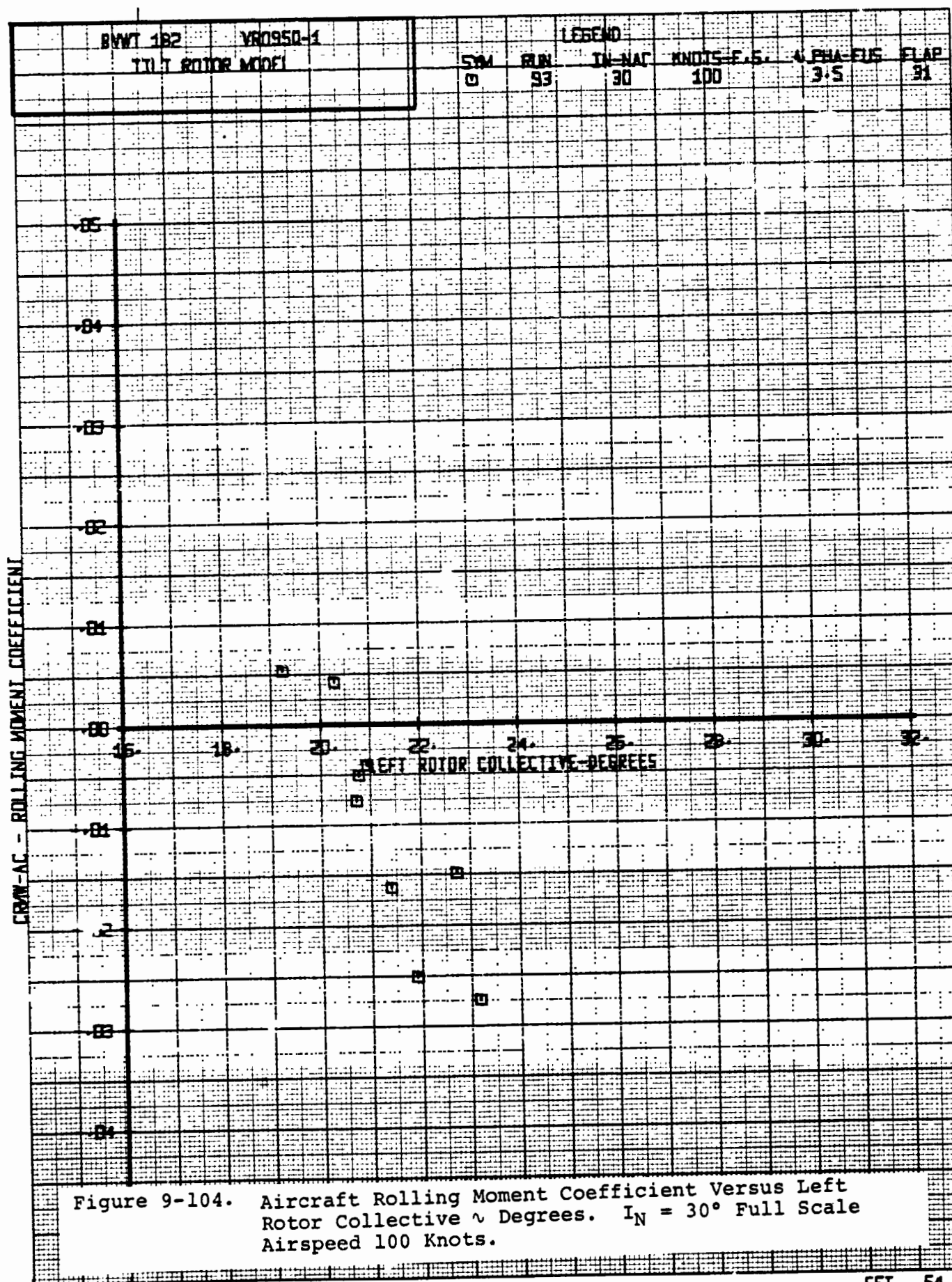












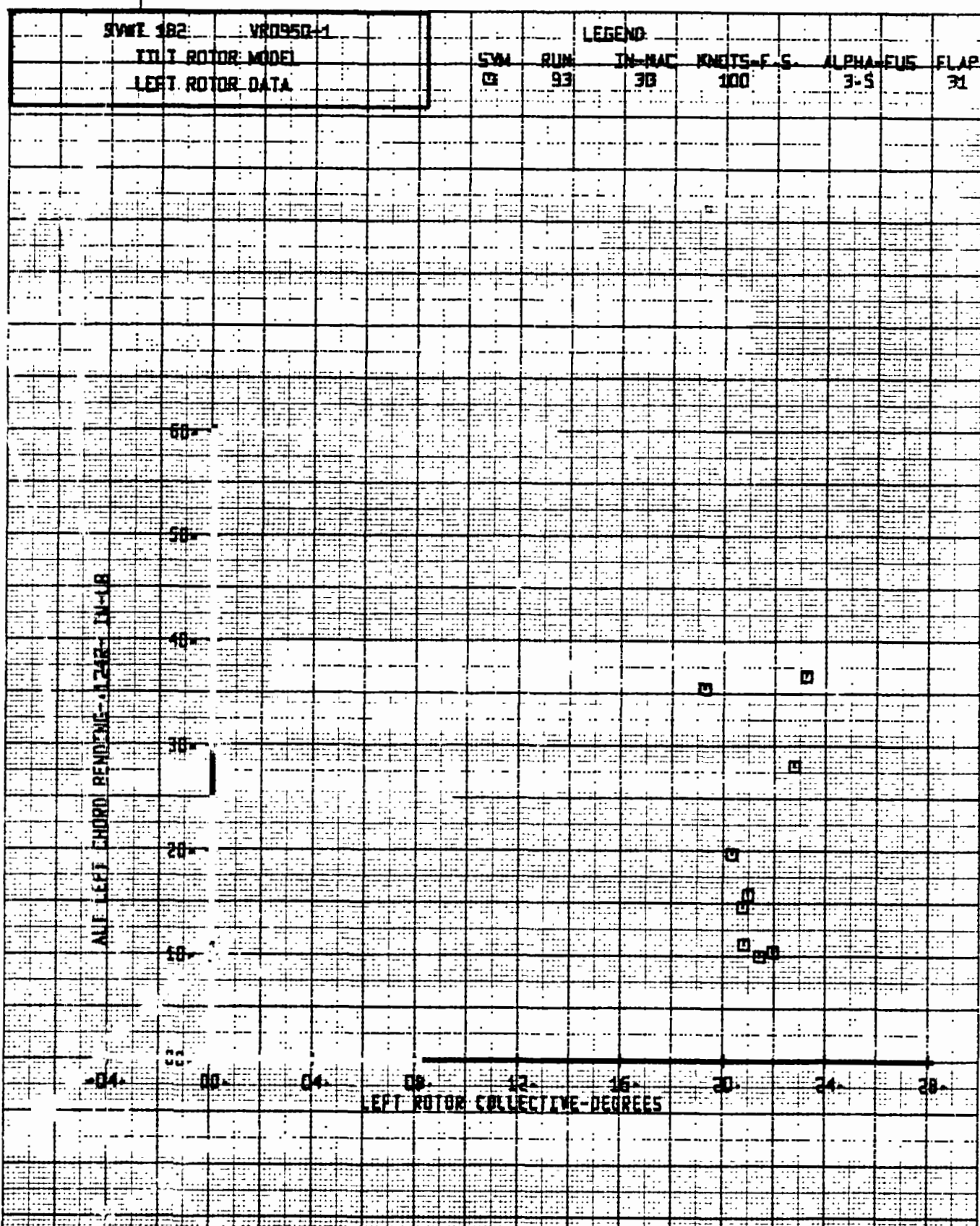
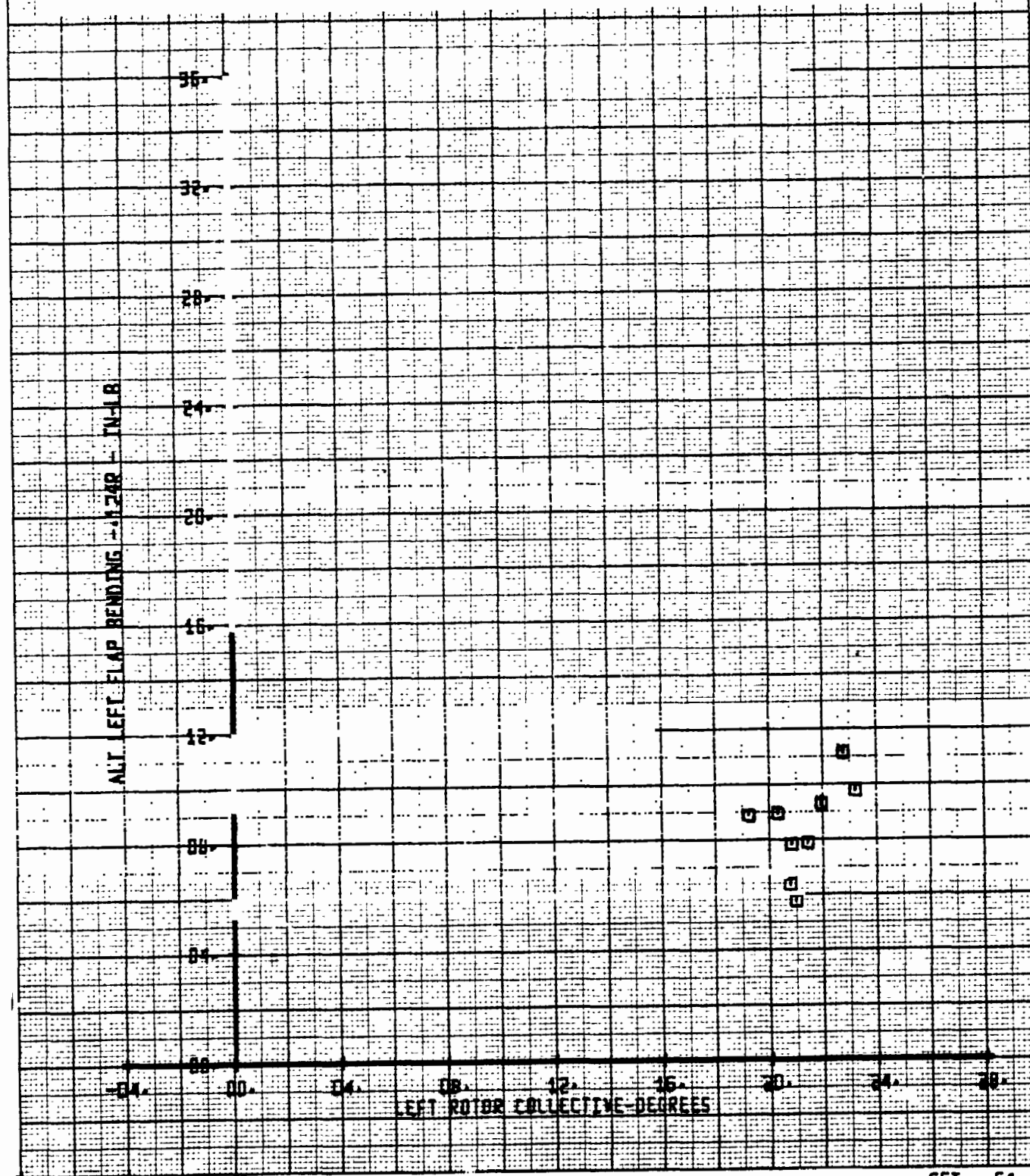
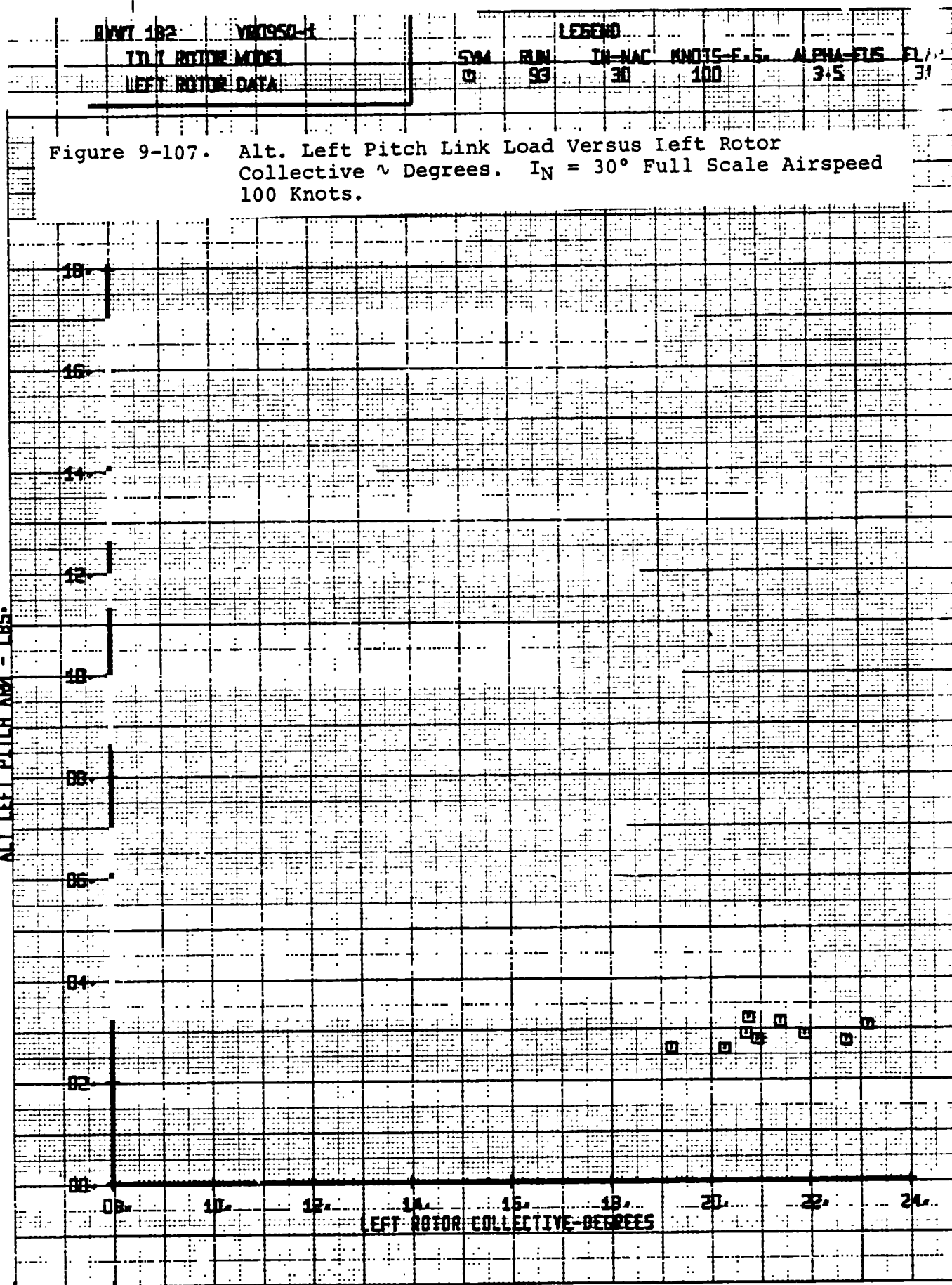


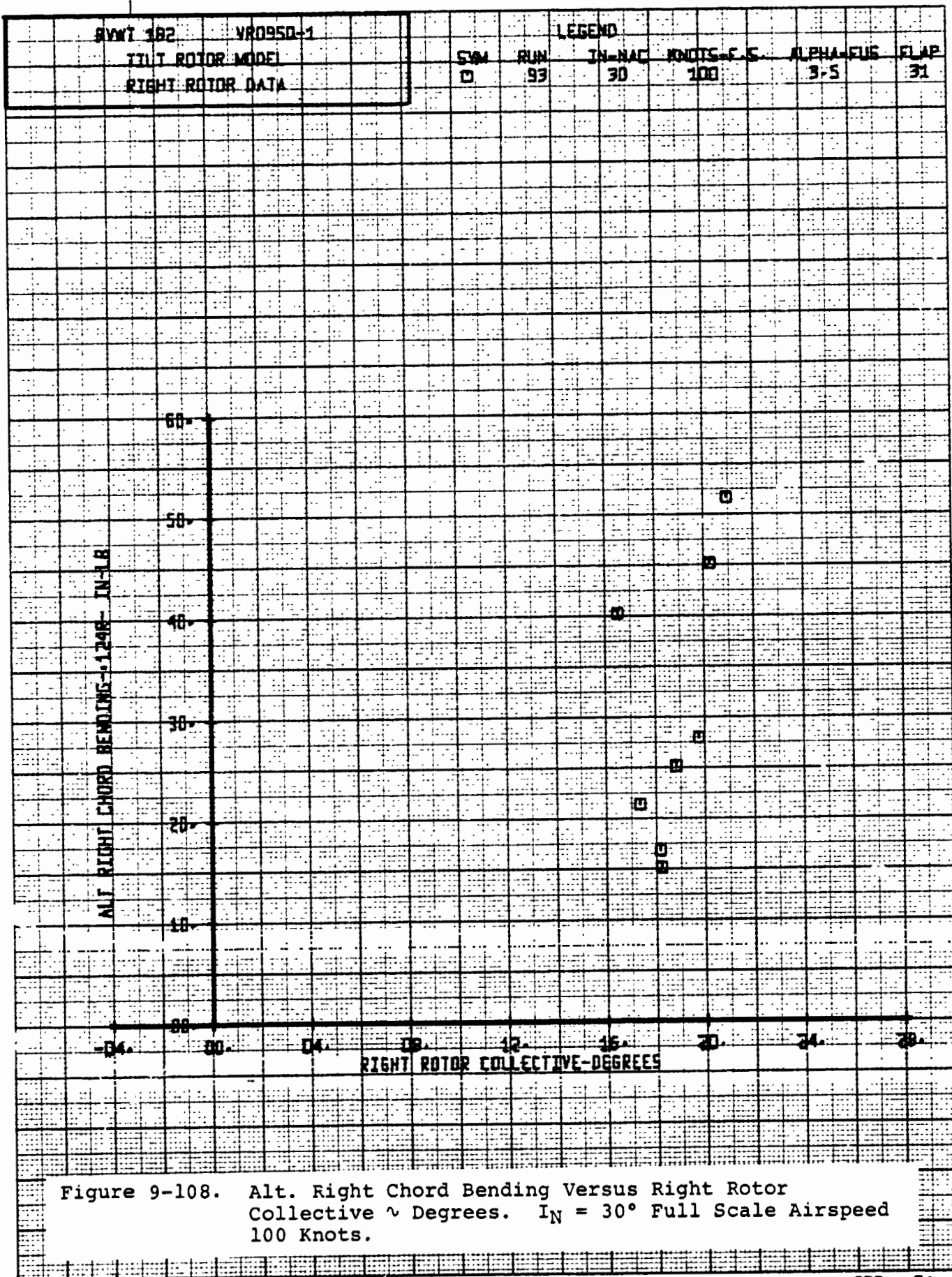
Figure 9-105. Alt. Left Chord Bending Versus Left Rotor Collective
 ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.

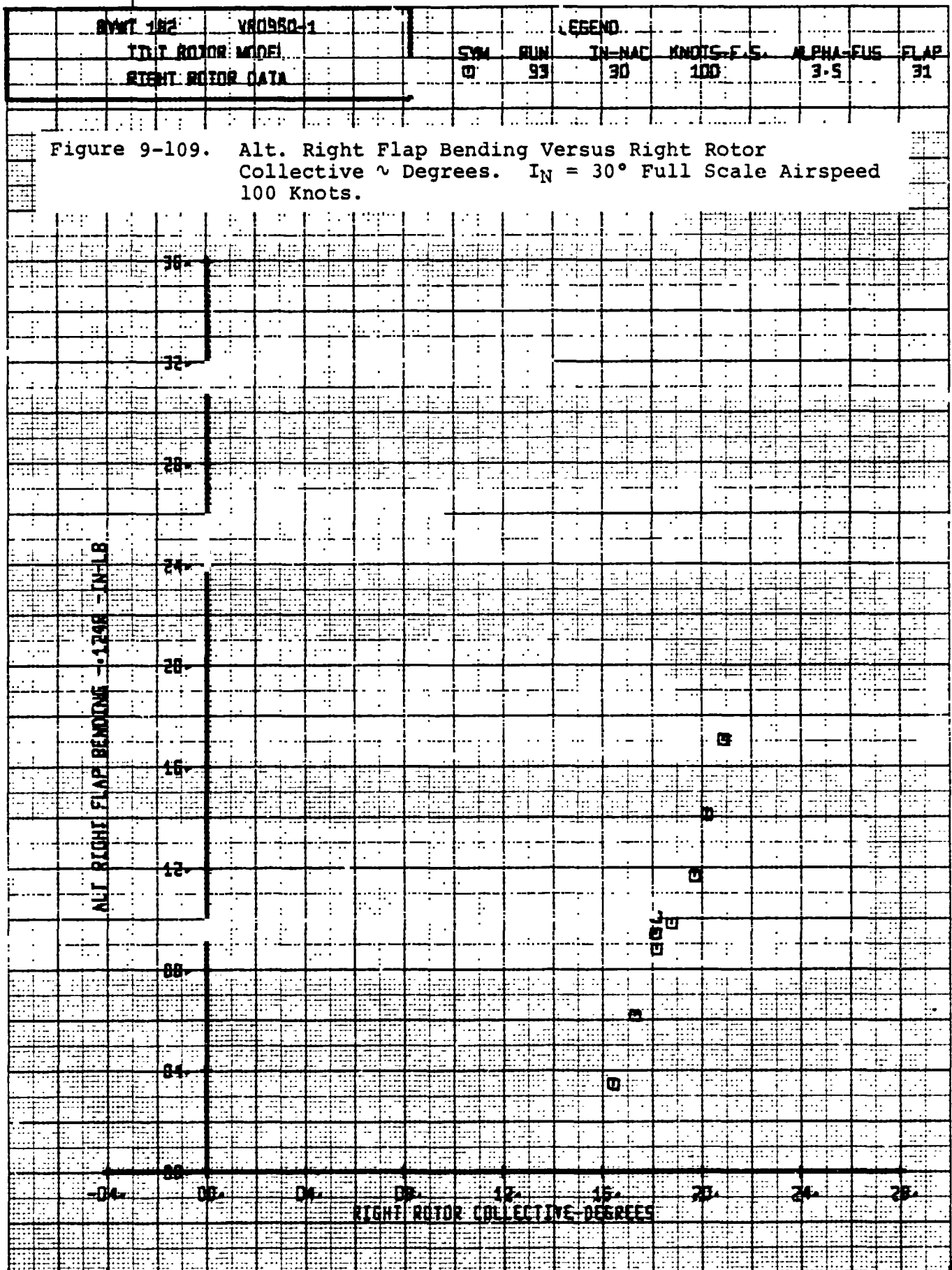
| | | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|------|
| BYWT 182 | VR0950-1 | LEGEND | | | | | |
| LEFT ROTOR MODEL | | SWN | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FUS | FLAP |
| LEFT ROTOR DATA | | 0 | 93 | 30 | 100 | 3-5 | 31 |

Figure 9-106. Alt. Left Flap Bending Versus Left Rotor Collective
~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.



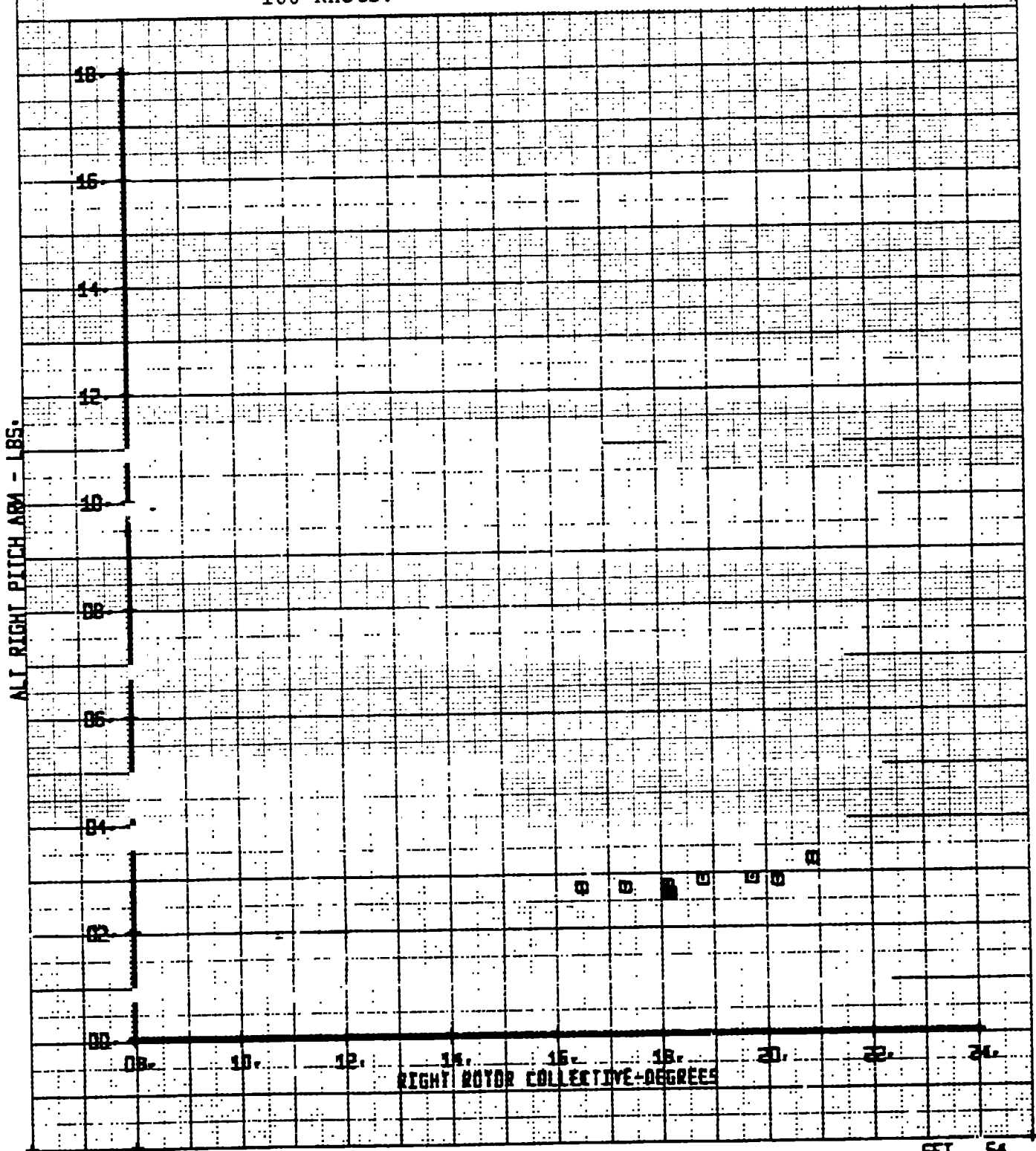






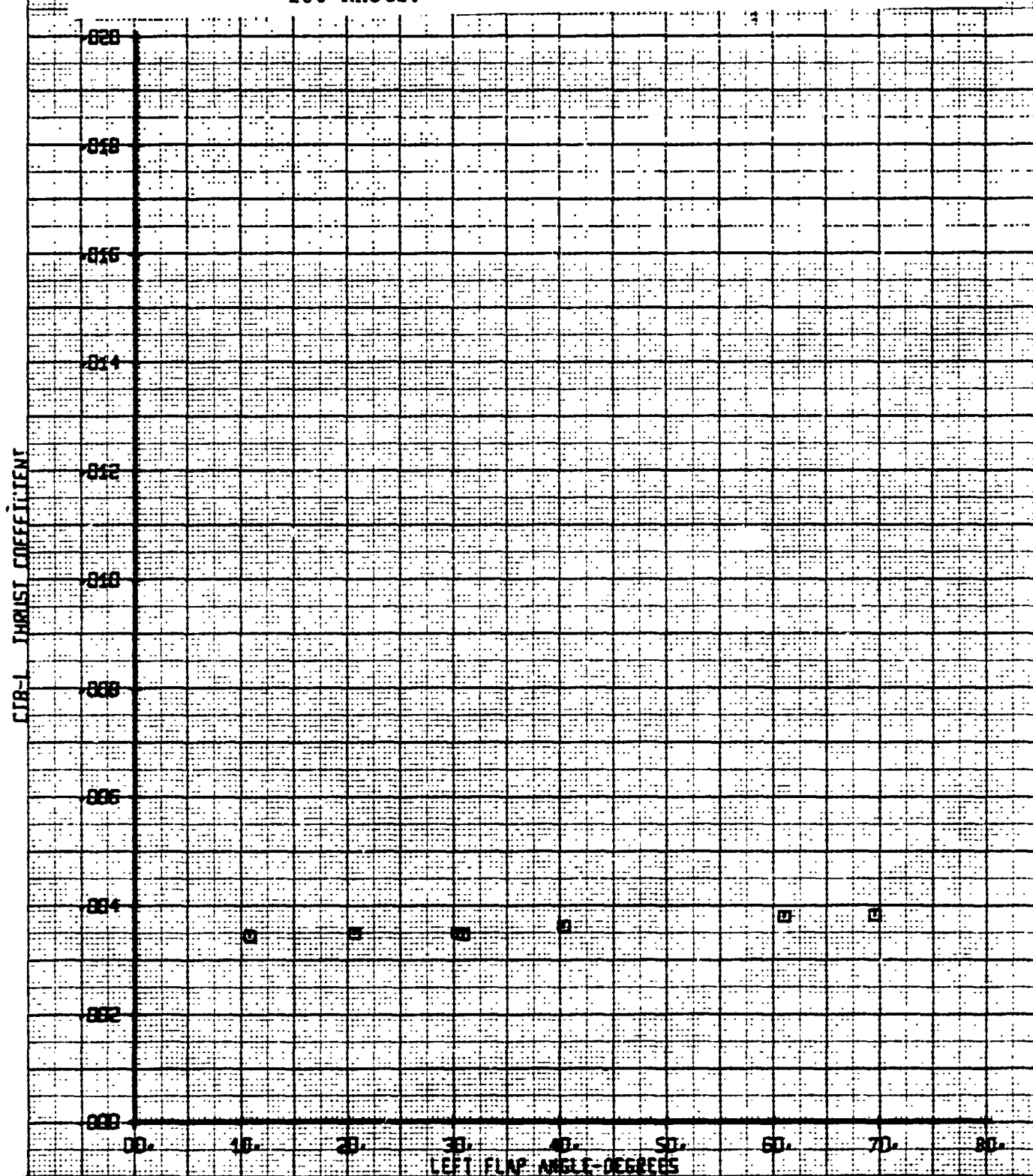
| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BWWT 182 | VR0950-1 | LEGEND | | | | |
| TILT ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-C.S. | ALPHA-FUS |
| RIGHT ROTOR DATA | | 0 | 93 | 30 | 100 | 3.5 |
| | | | | | | 81 |

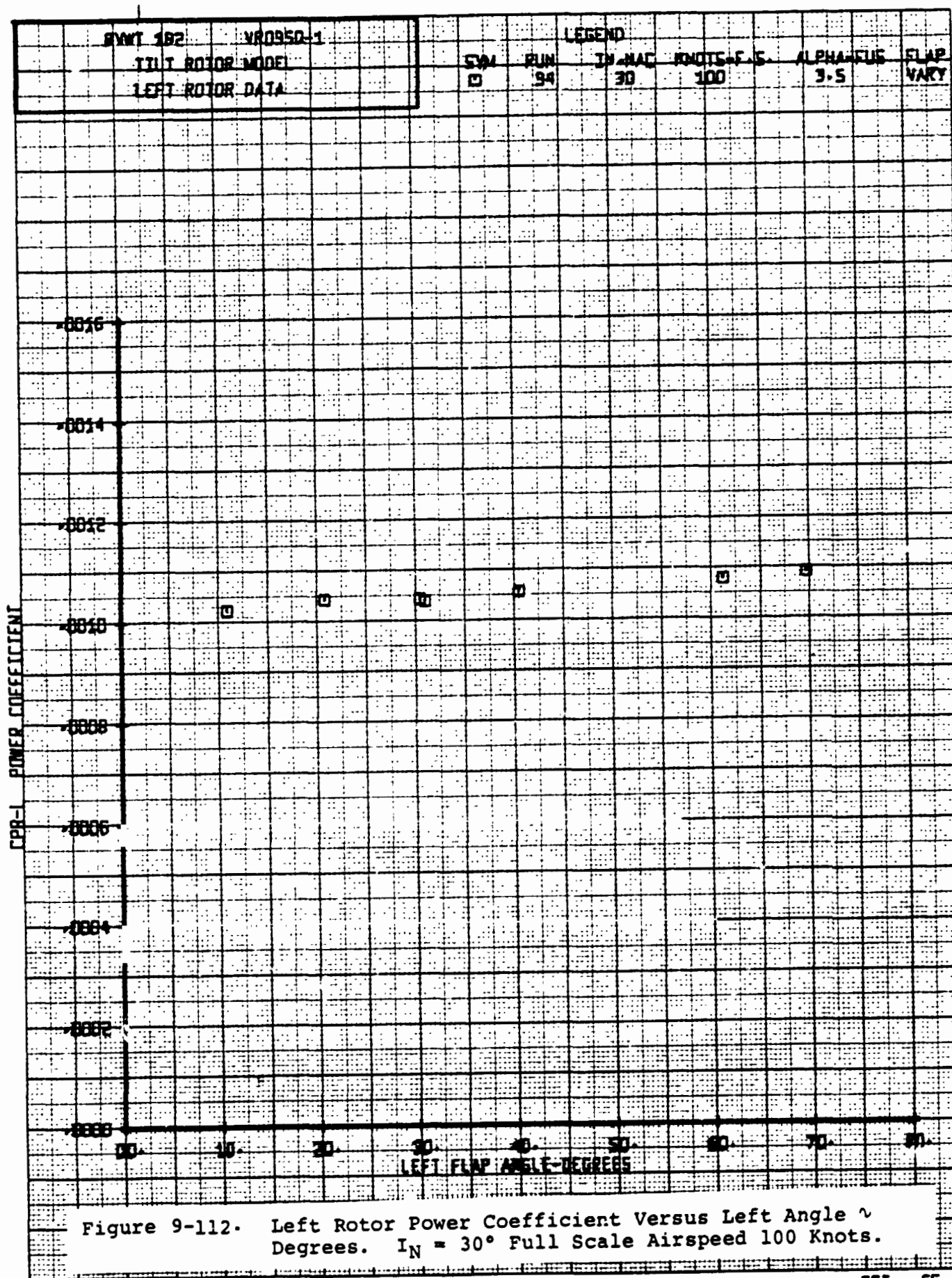
Figure 9-110. Alt. Right Pitch Link Load Versus Right Rotor Collective ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.

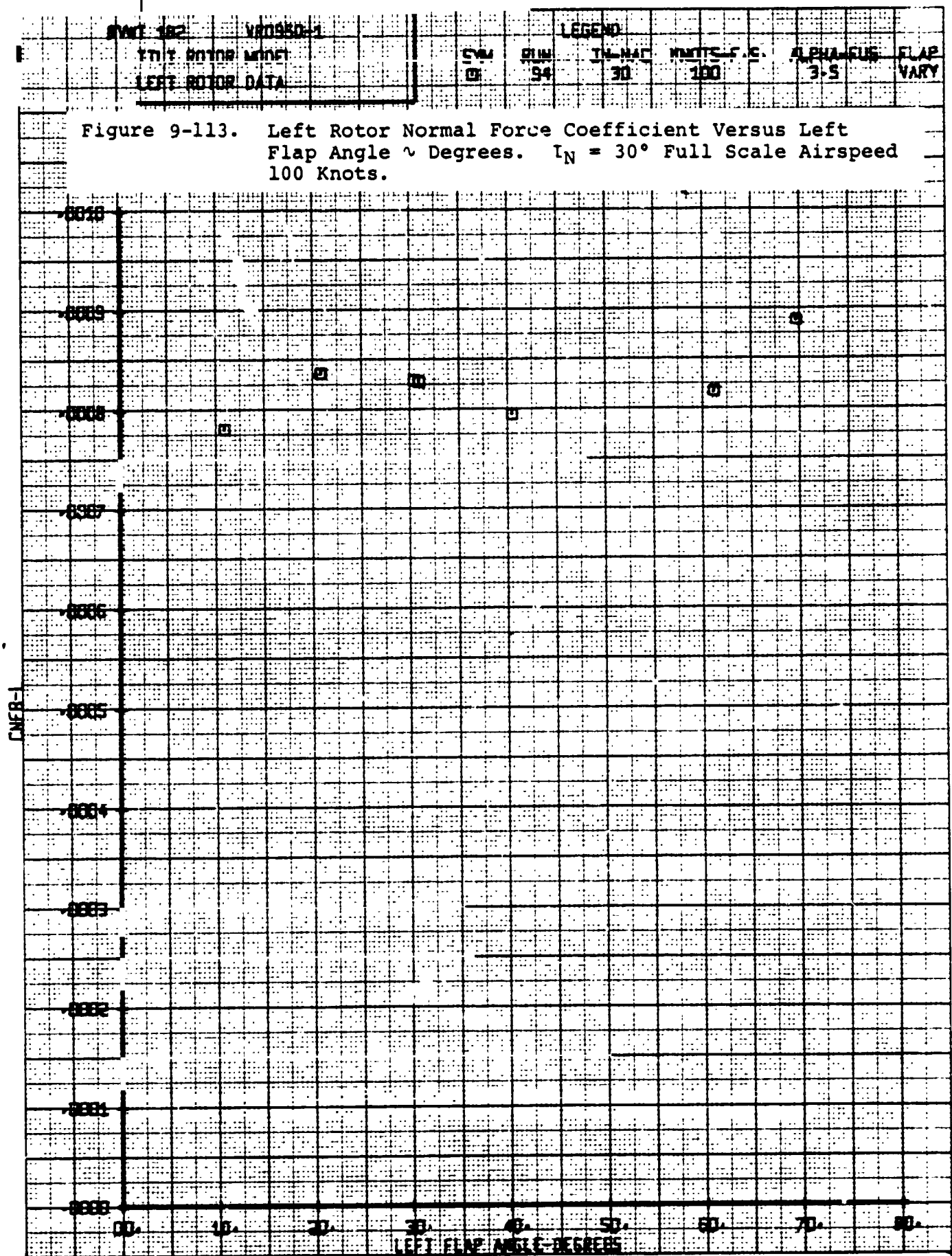


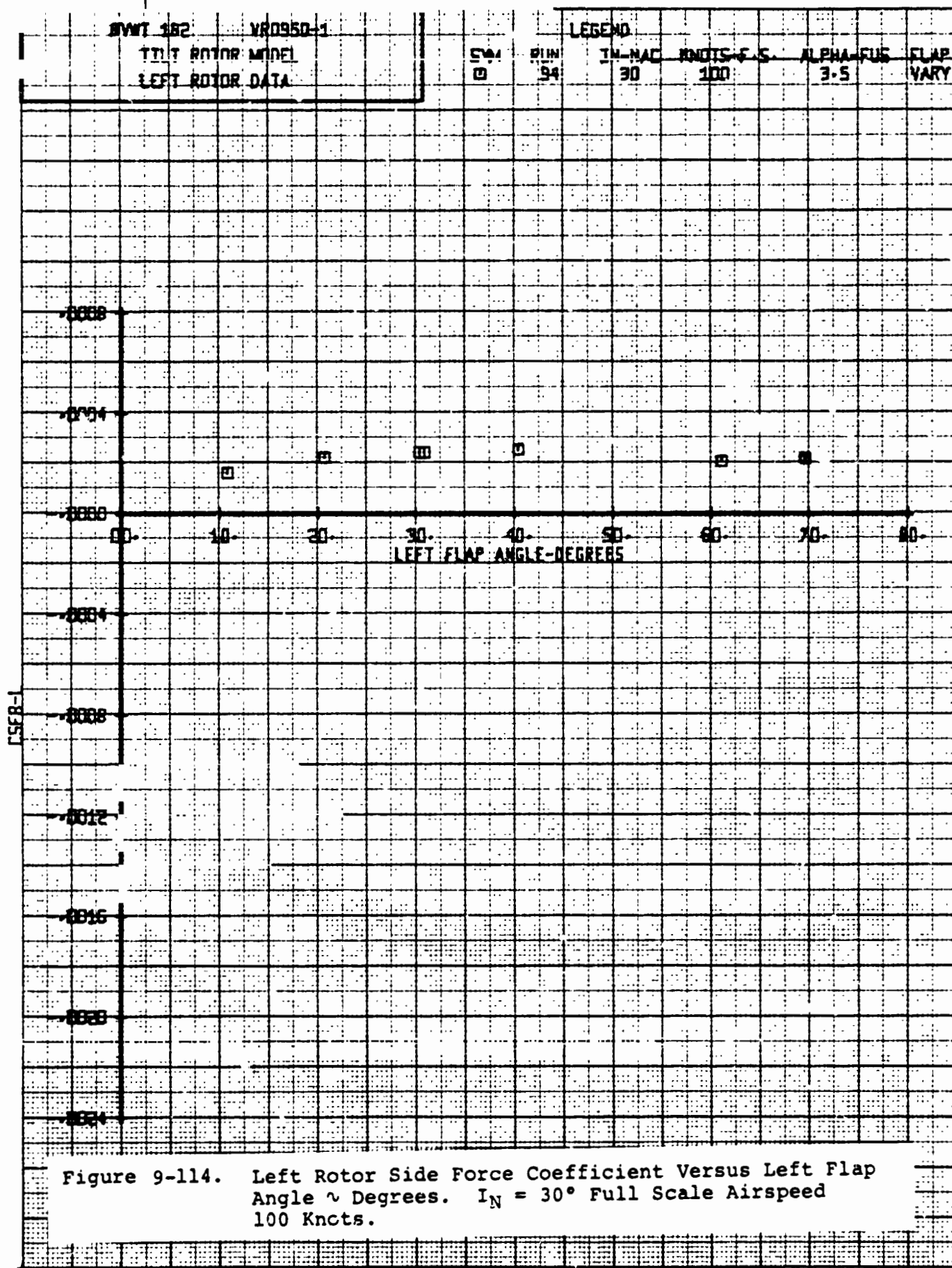
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|------------------|----------|--------|-----|--------|------------|-----------|
| BYWT 182 | VR095D-1 | LEGEND | | | | |
| LEFT ROTOR MODEL | | SW | RUN | IN-HAC | FOOTS-F.S. | ALPHA-FLG |
| LEFT ROTOR DATA | | 0 | 94 | 30 | 100 | 3-5 |
| | | | | | | FLAP VARY |

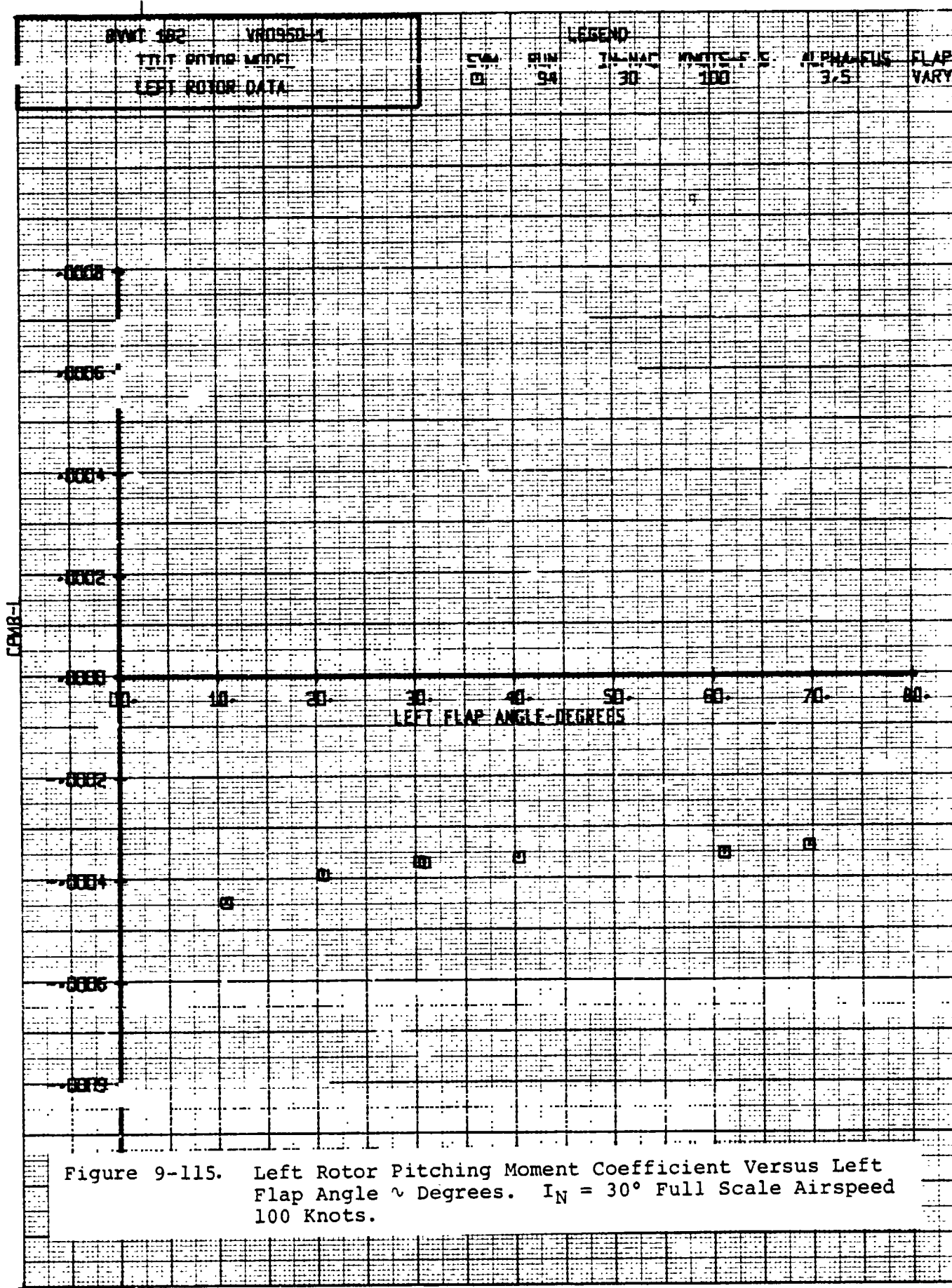
Figure 9-111. Left Rotor Thrust Coefficient Versus Left Flap Angle ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.

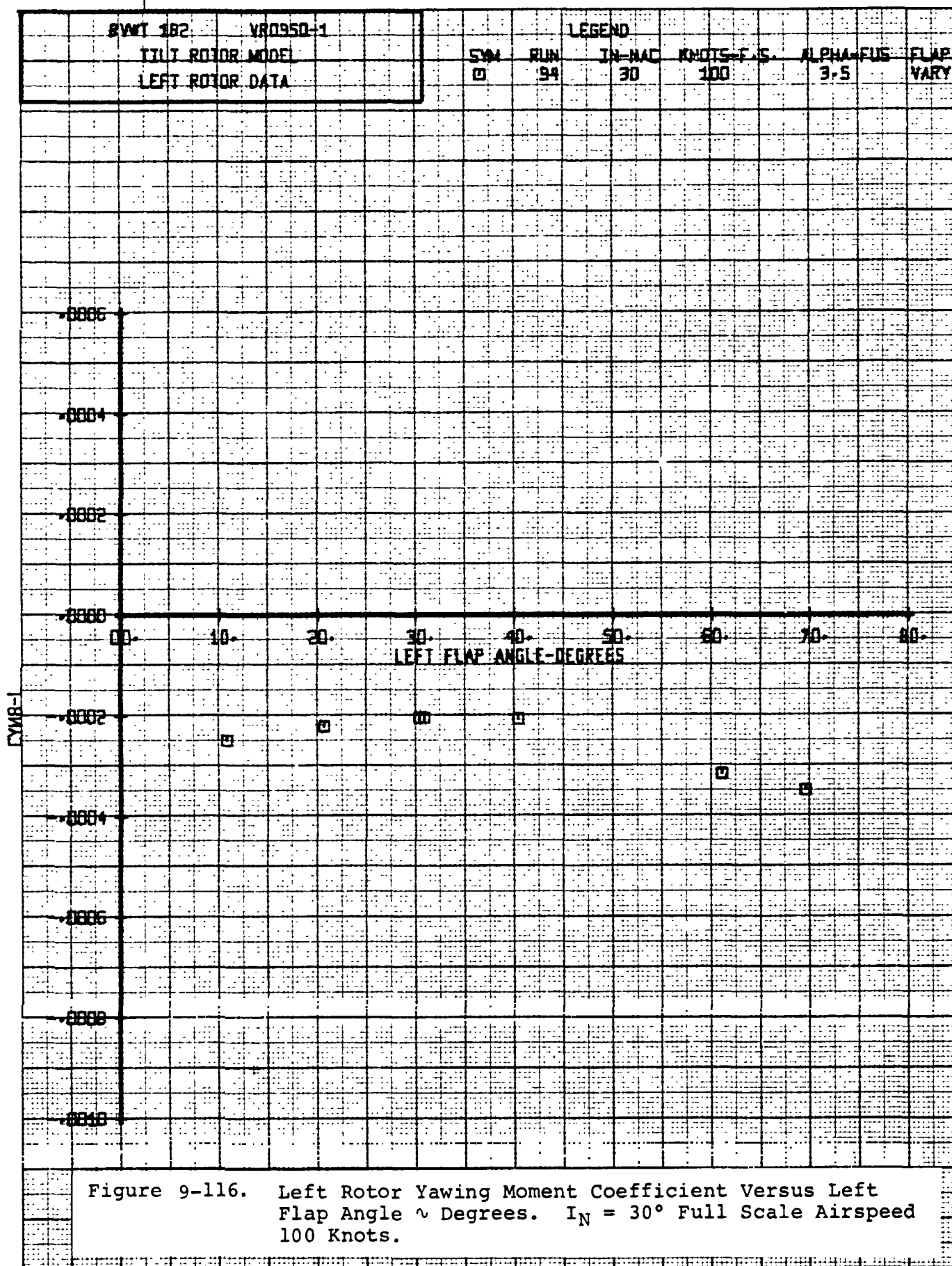






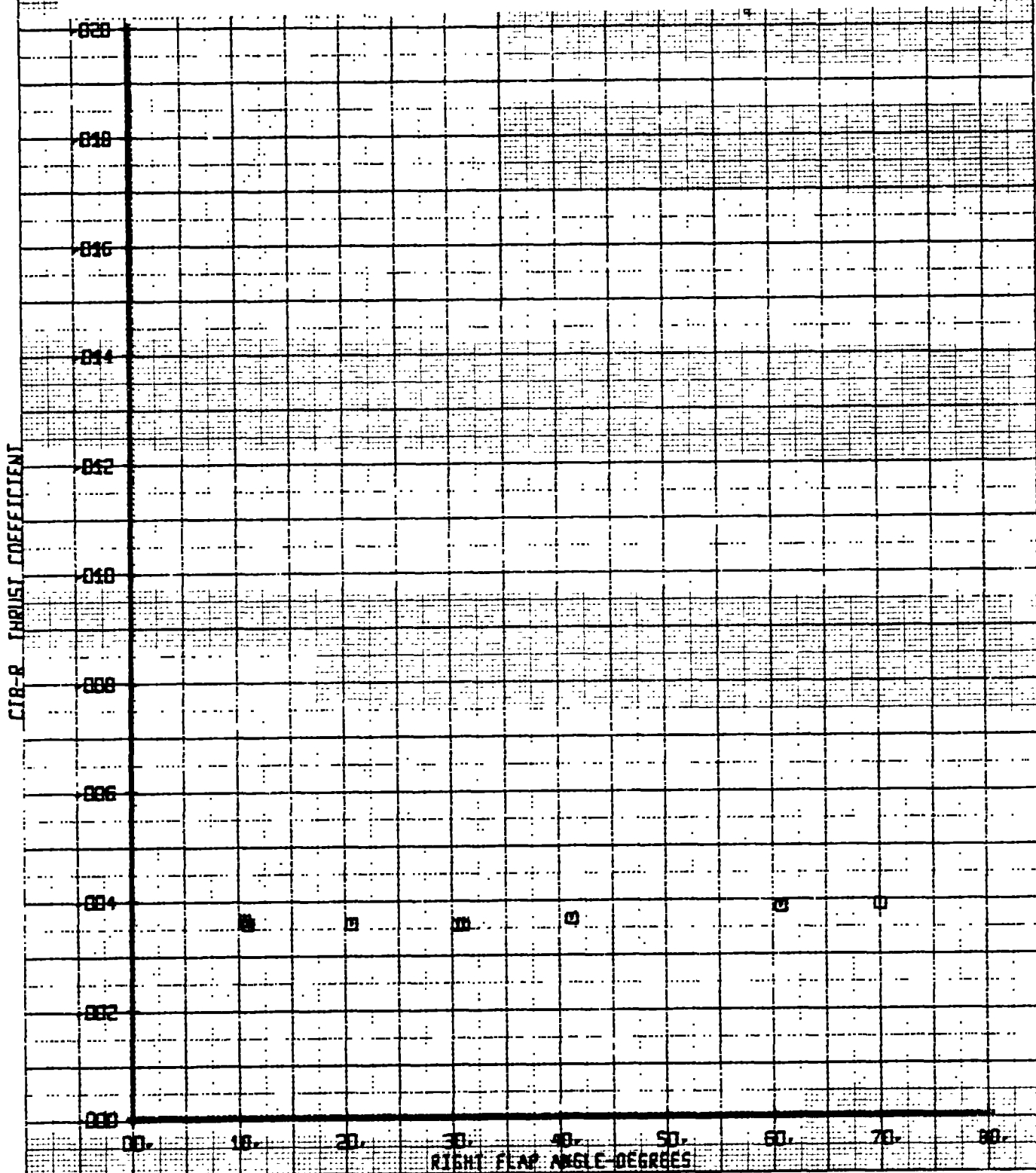






| | | | | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|------|--|--|
| BVWT 182 | VR095D-1 | LEGEND | | | | | | | |
| LEFT ROTOR MODEL | | SYM | RUN | IN-HAT | KNOTS-F.S. | ALPHA-FUS | FLAP | | |
| RIGHT ROTOR DATA | | 0 | 94 | 90 | 100 | 9-5 | VARY | | |

Figure 9-117. Right Rotor Thrust Coefficient Versus Right Flap Angle ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.



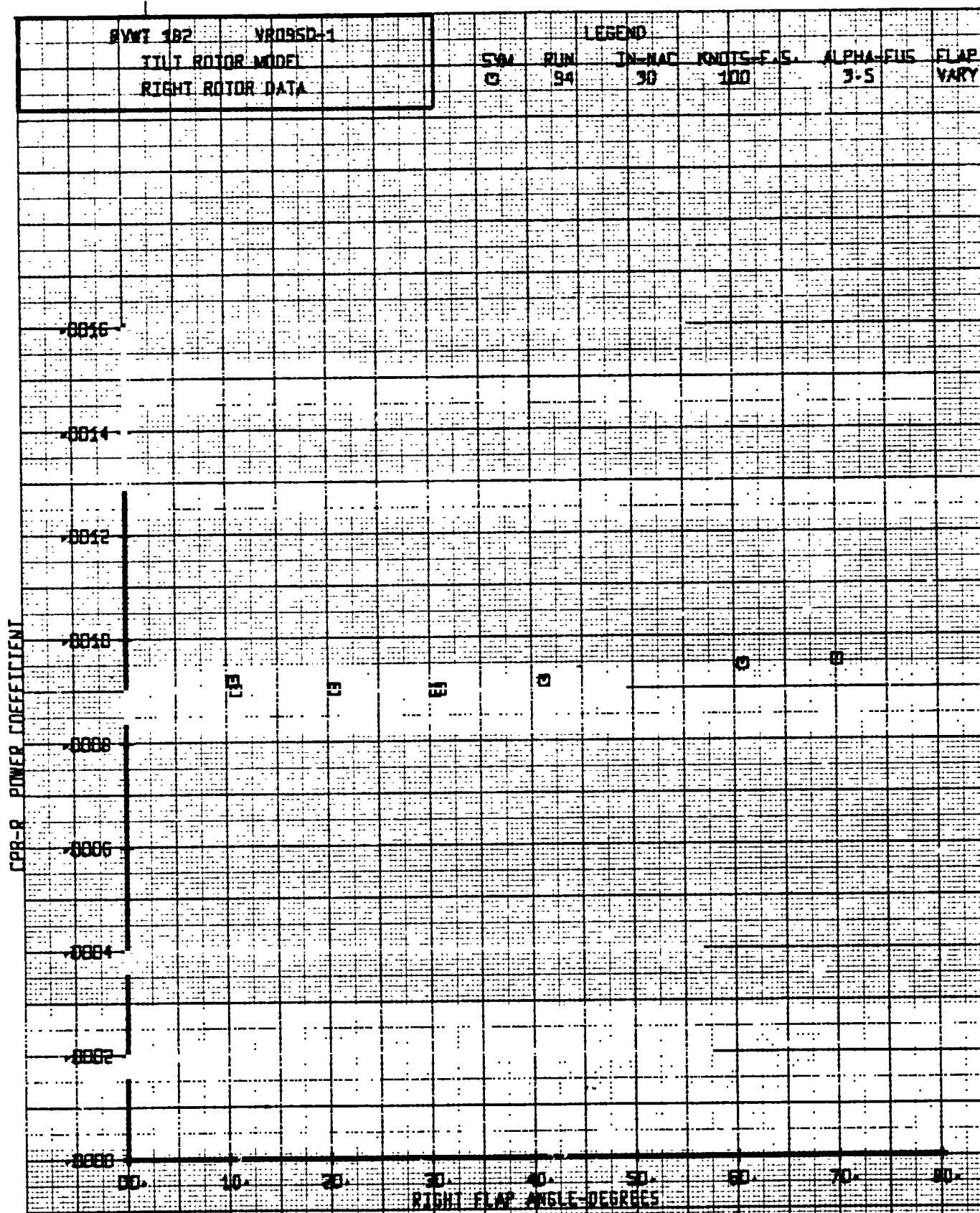
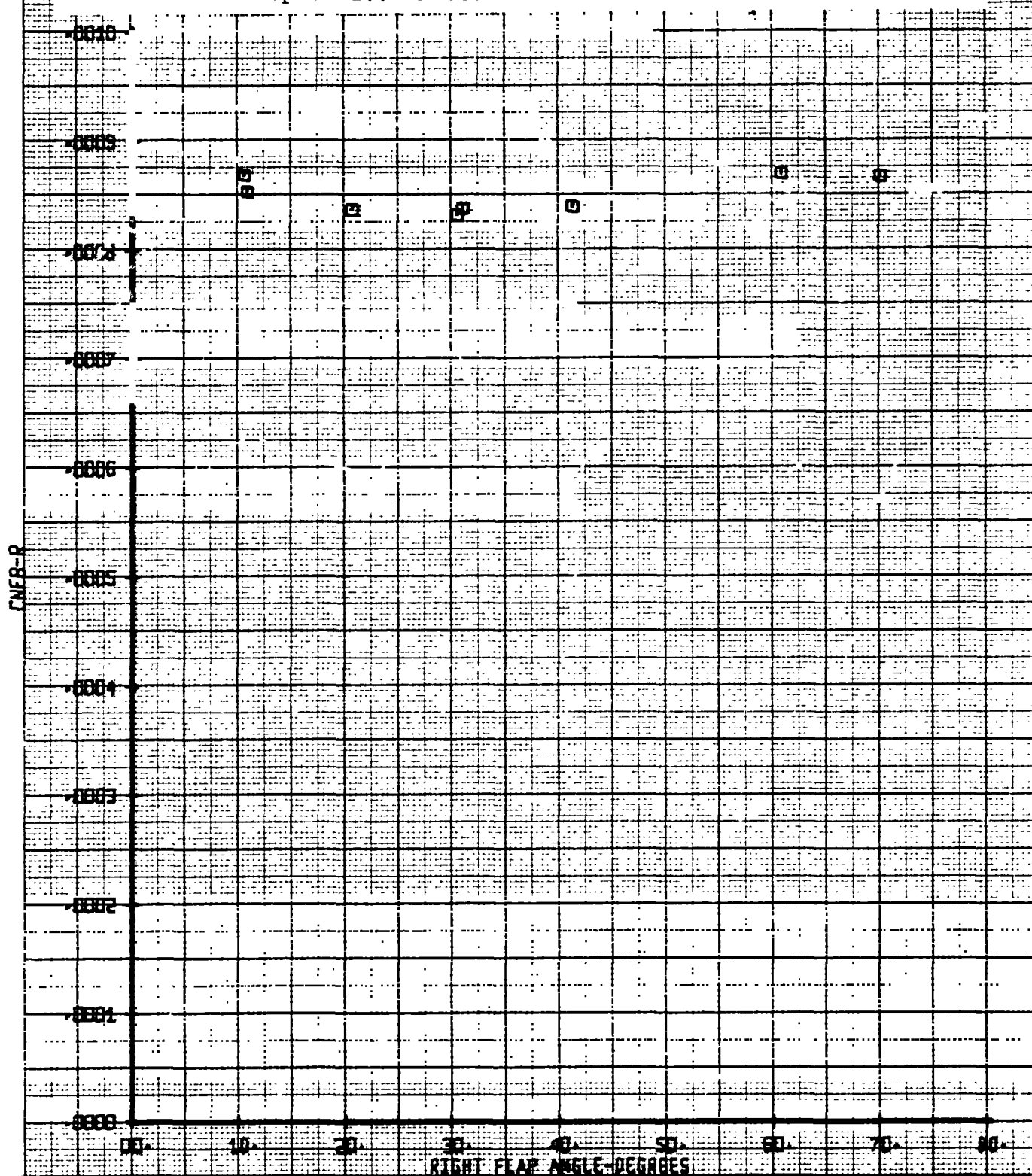


Figure 9-118. Right Rotor Power Coefficient Versus Right Flap Angle ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.

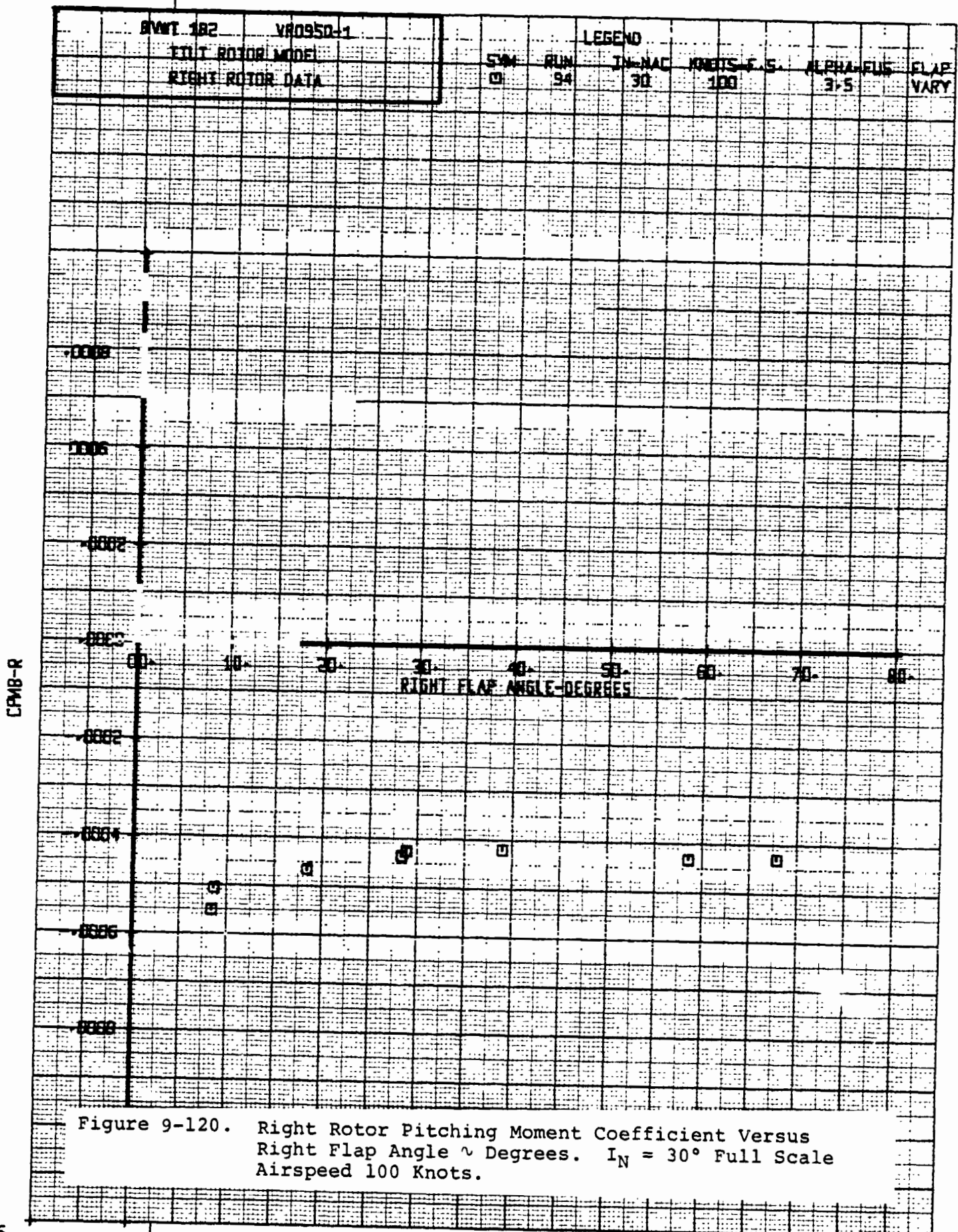
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|------------------|----------|--------|-----|--------|------------|-----------|------|--|
| BVWT 182 | VR0950-1 | LEGEND | | | | | | |
| 7711 ROTOR MODEL | | SM | RUN | IN-MAC | KNOTS-F.S. | ALPHA-FUS | FLAP | |
| RIGHT ROTOR DATA | | 0 | 94 | 30 | 100 | 3-5 | VARY | |

Figure 9-119. Right Rotor Normal Force Coefficient Versus Right Flap Angle γ Degrees. $I_N = 30^\circ$ Full Scale Air-speed 100 Knots.



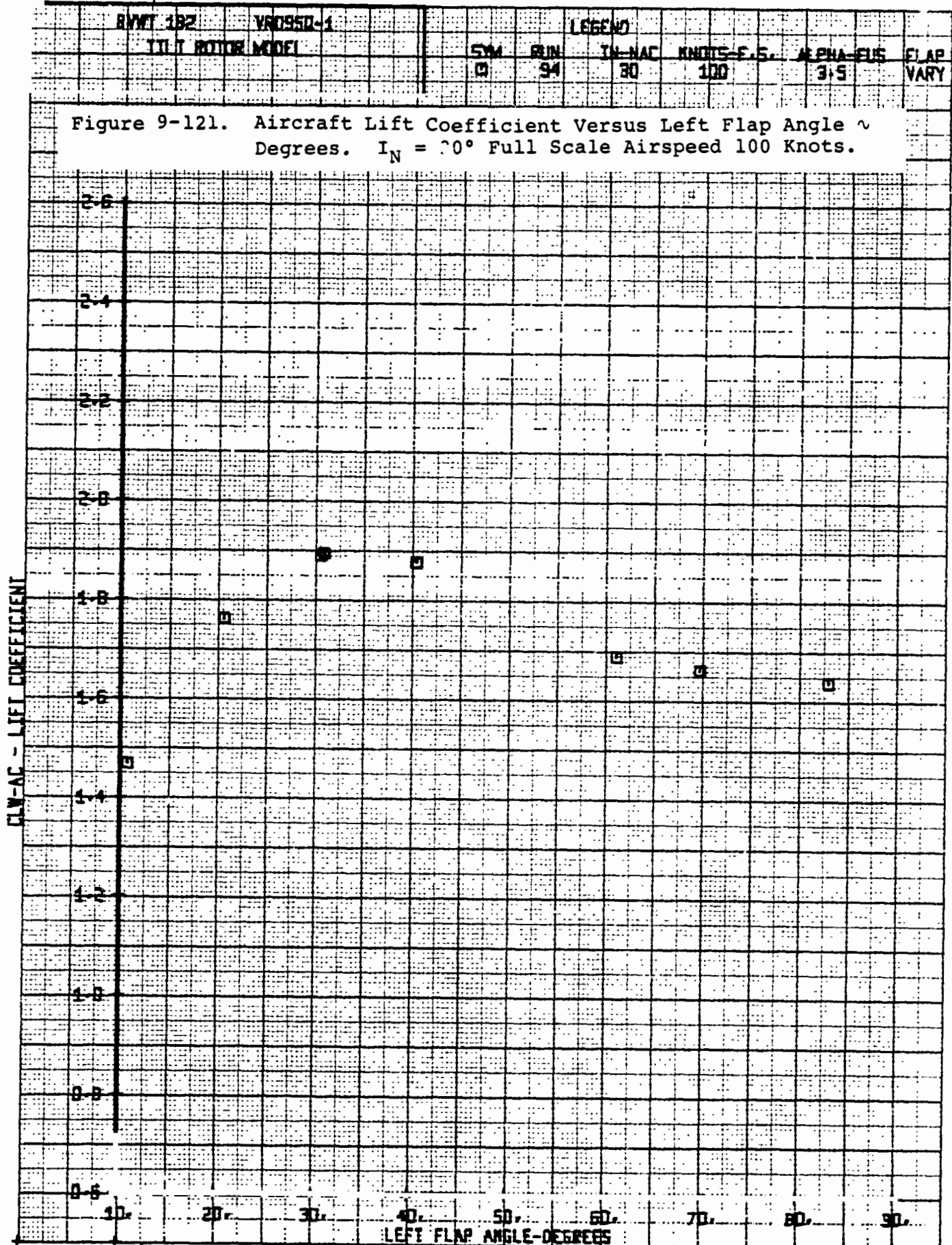
D238-10000-3

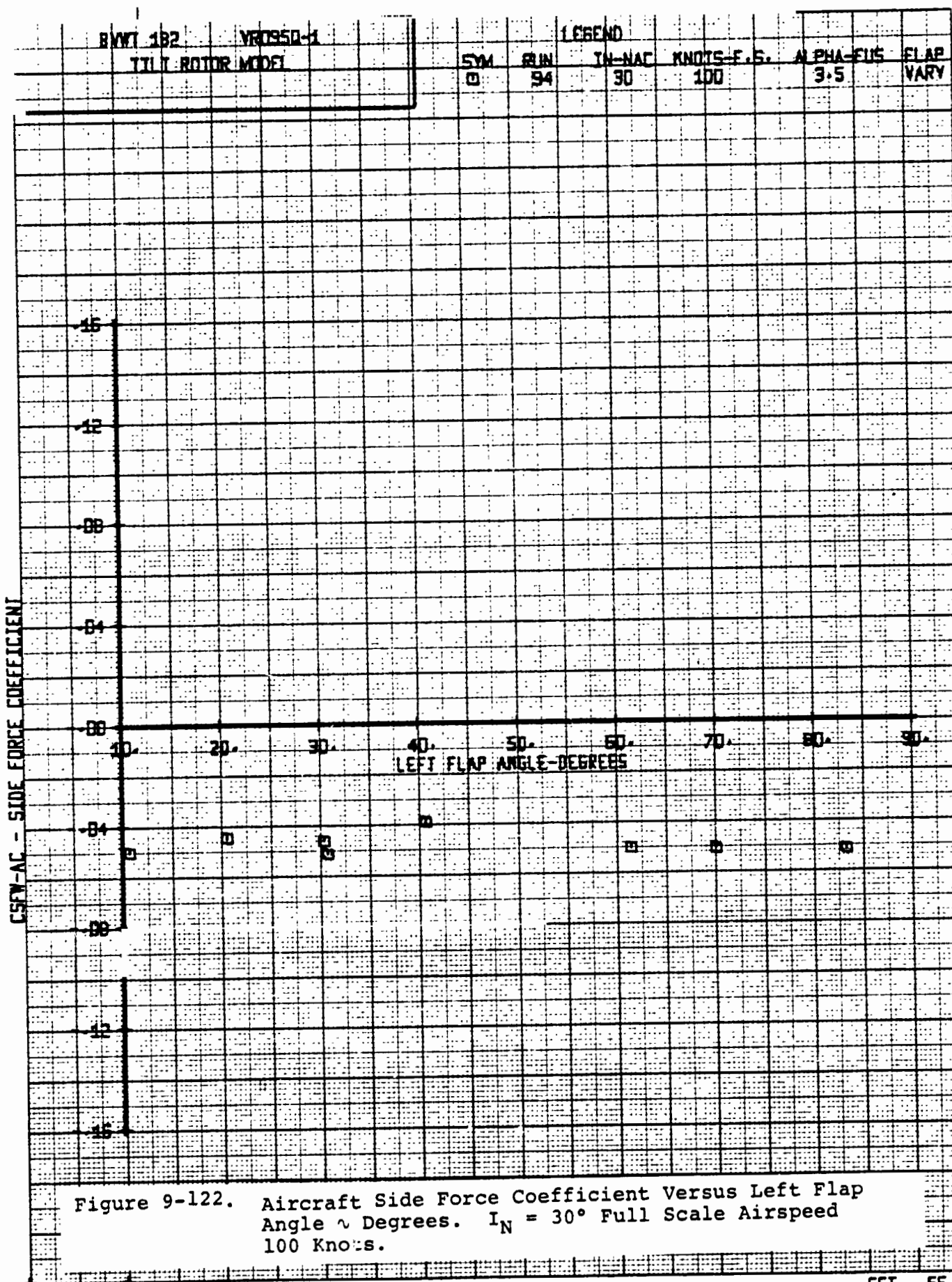
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D238-10000-3

Data Deleted
Refer to Section 3.0





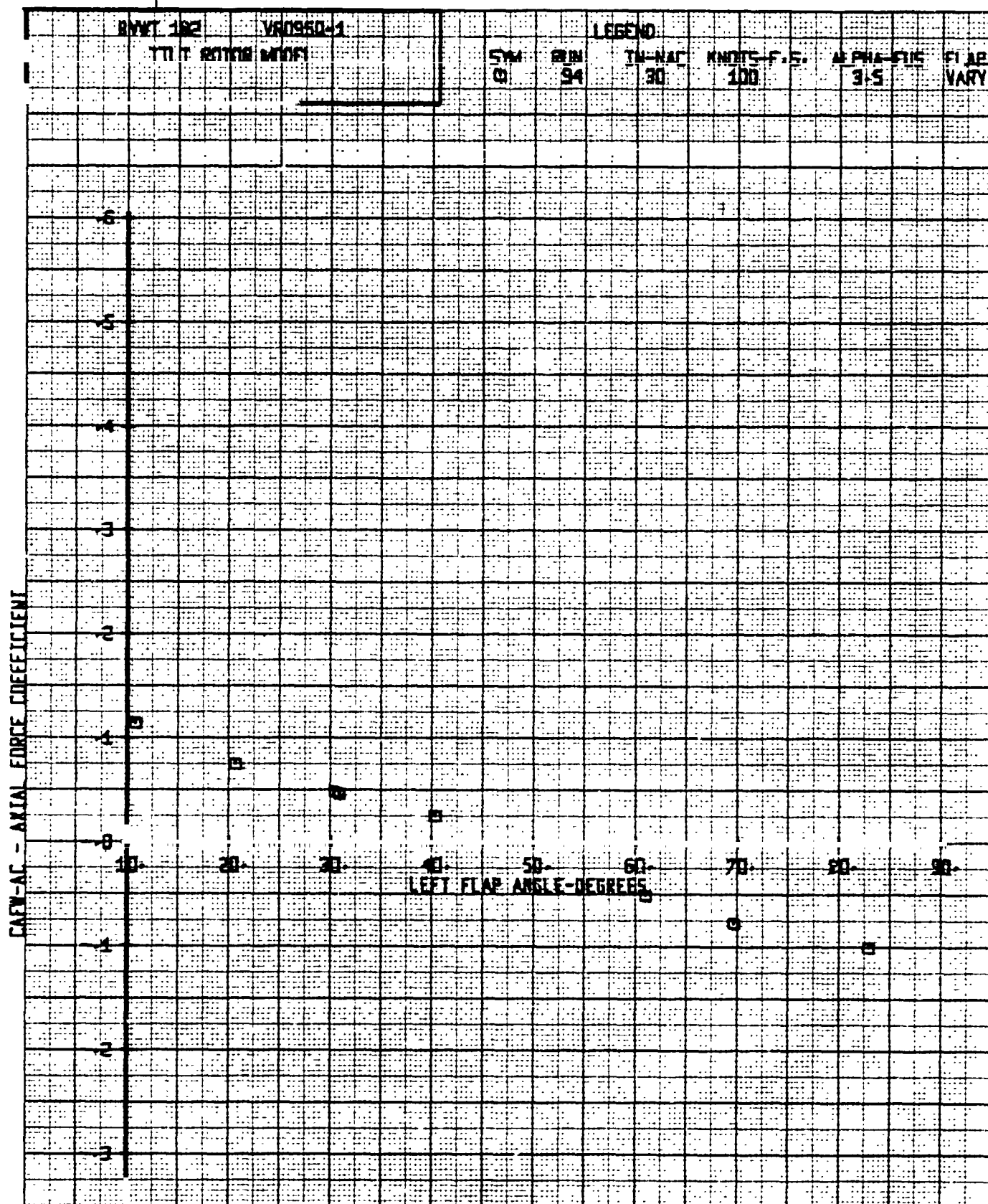
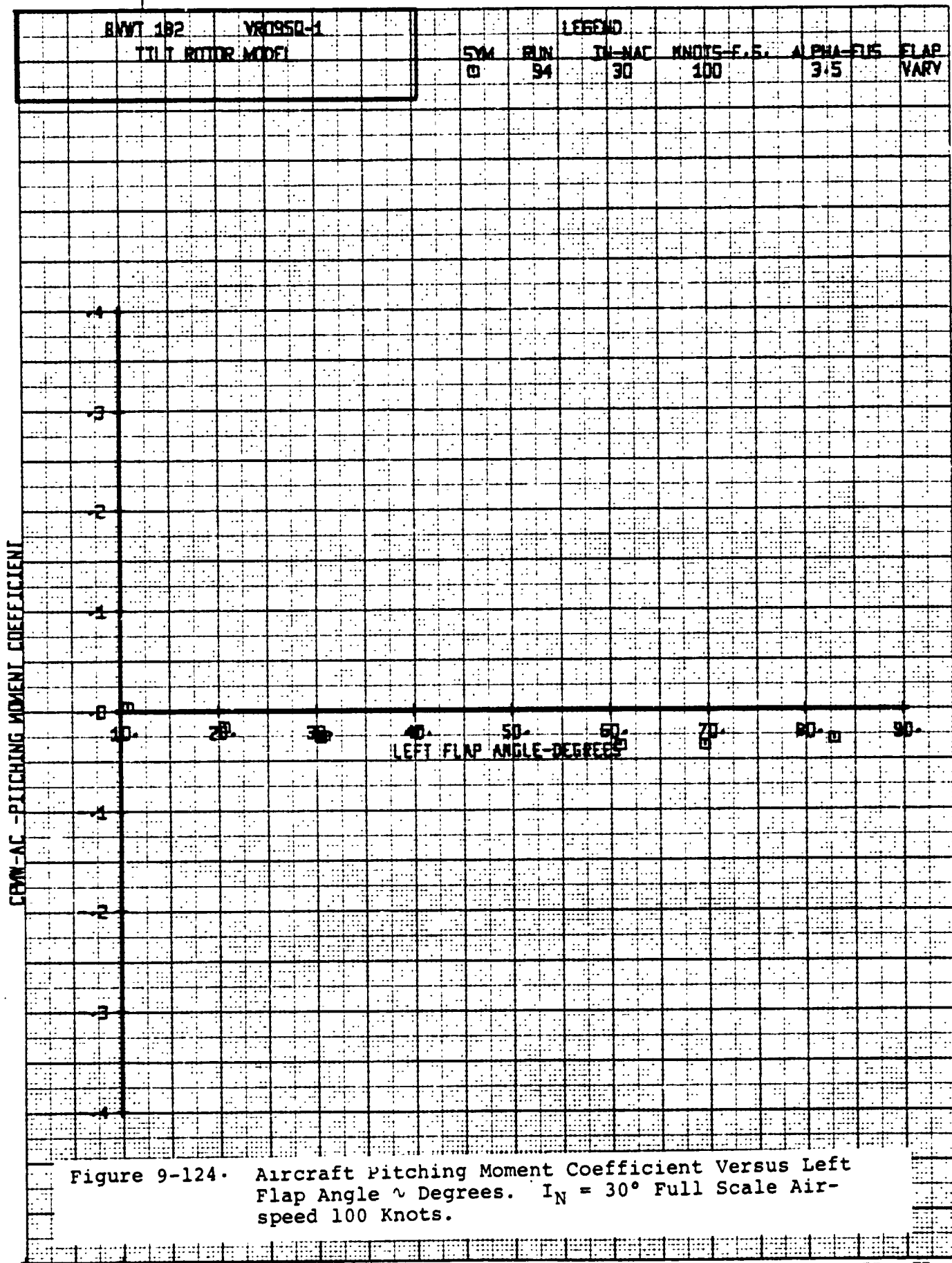
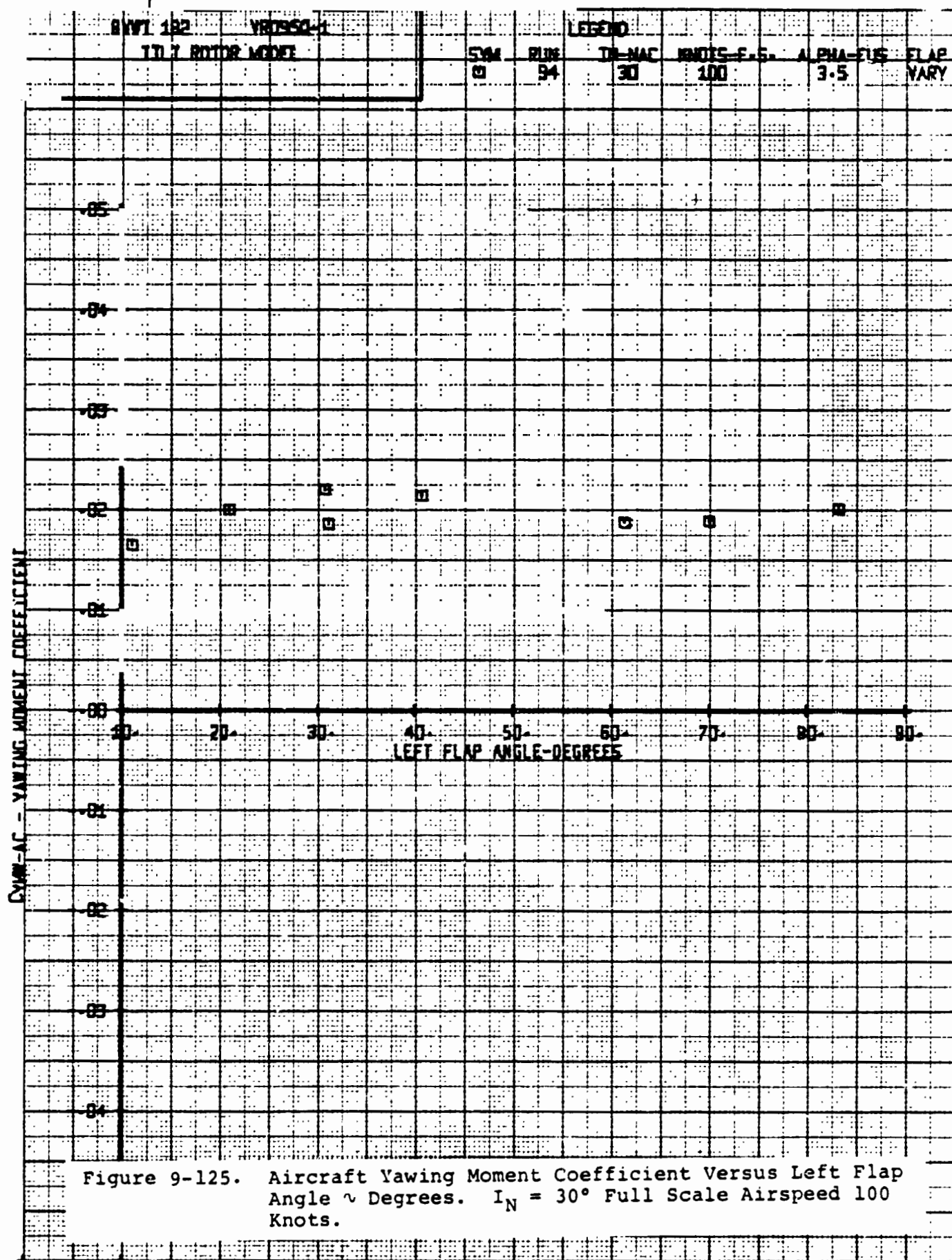
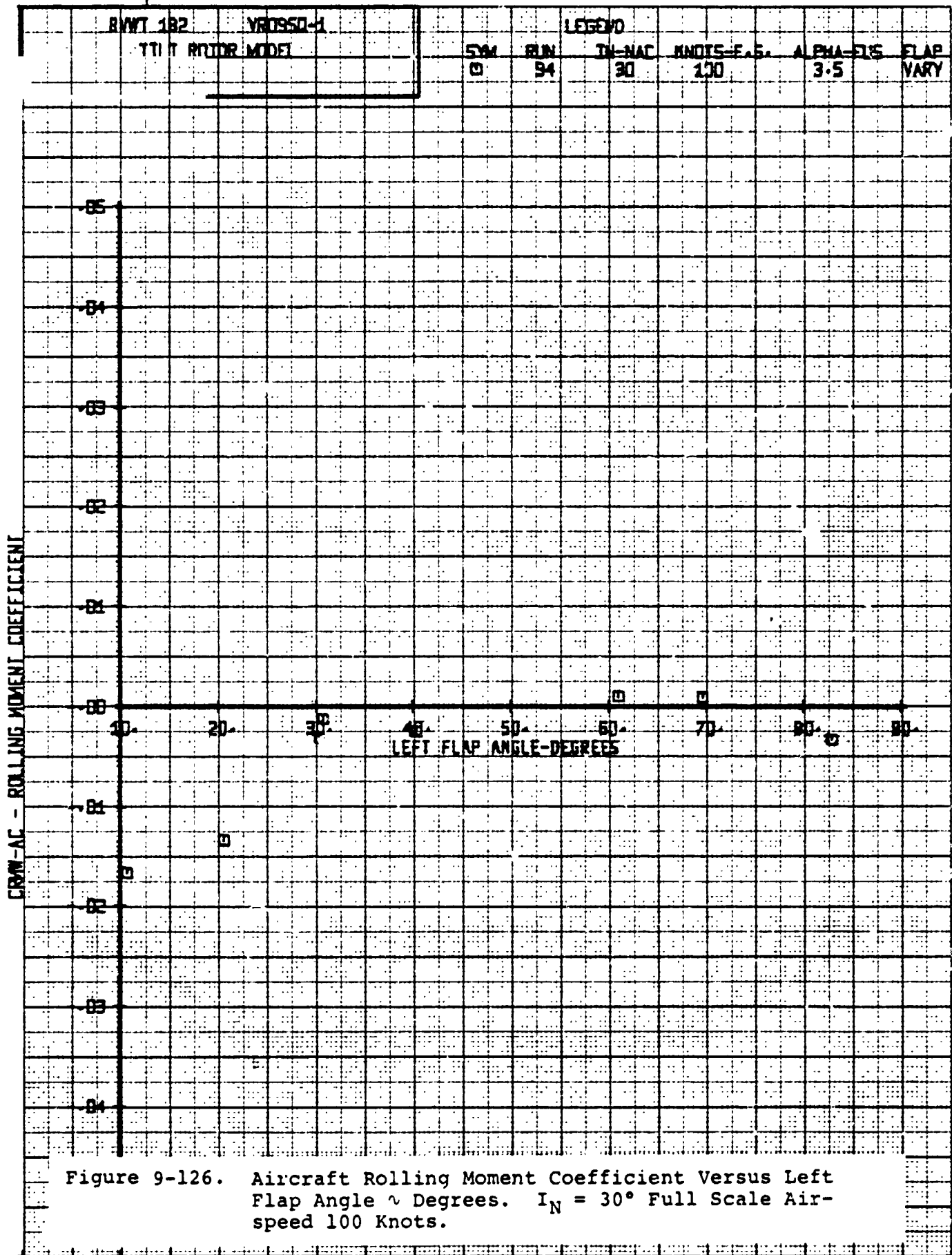


Figure 9-123. Aircraft Axial Force Coefficient Versus Left Flap Angle ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.







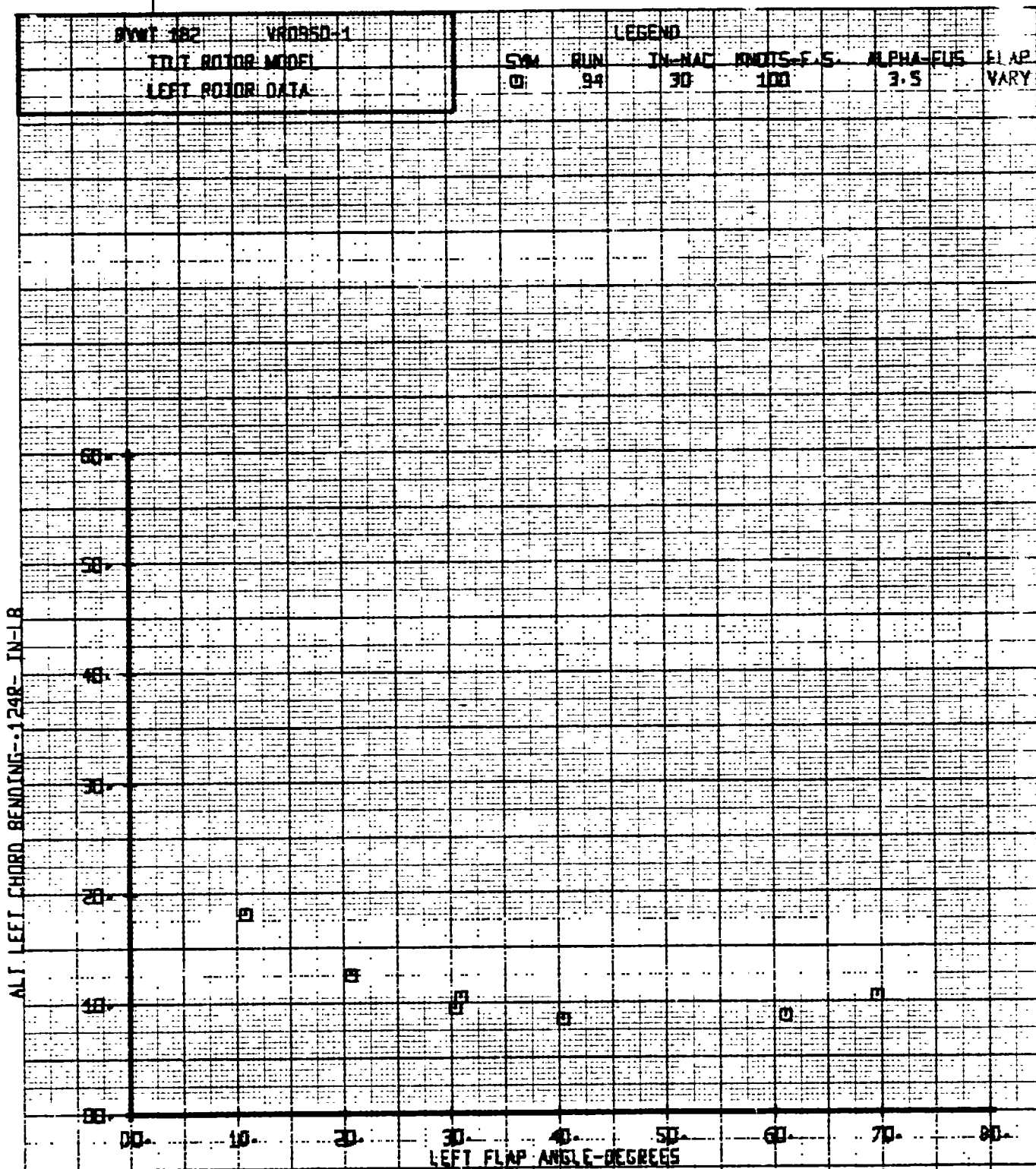
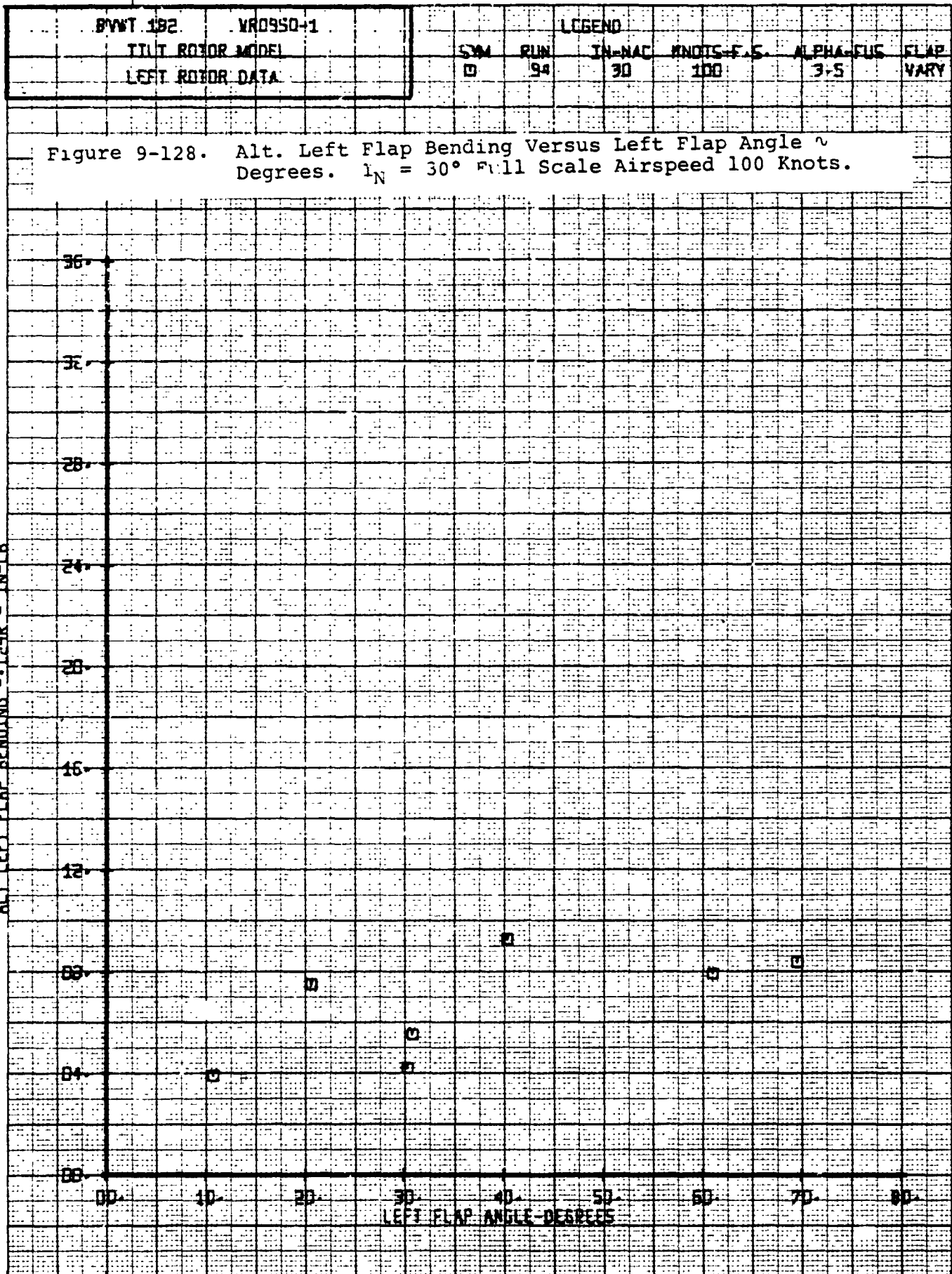
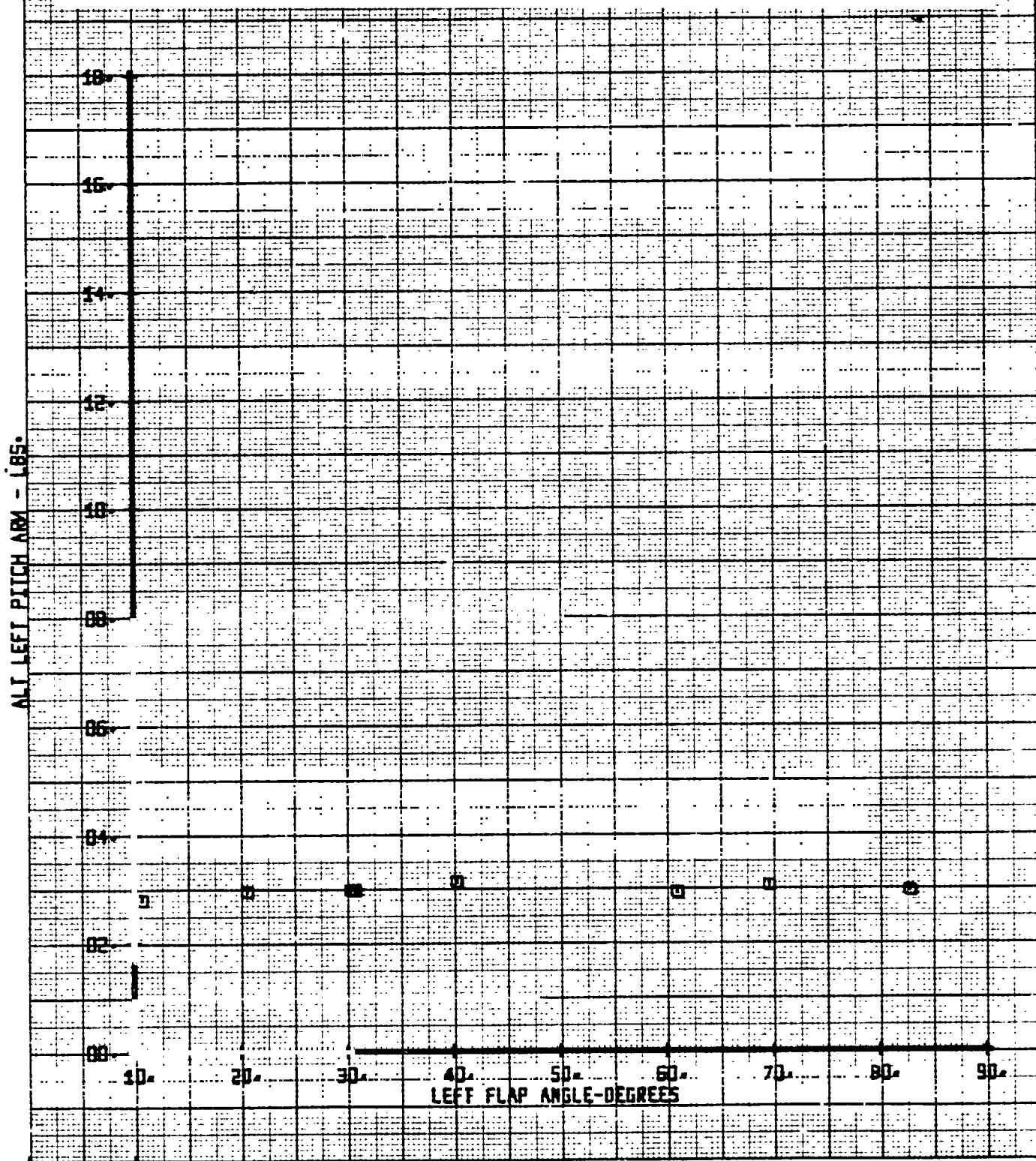


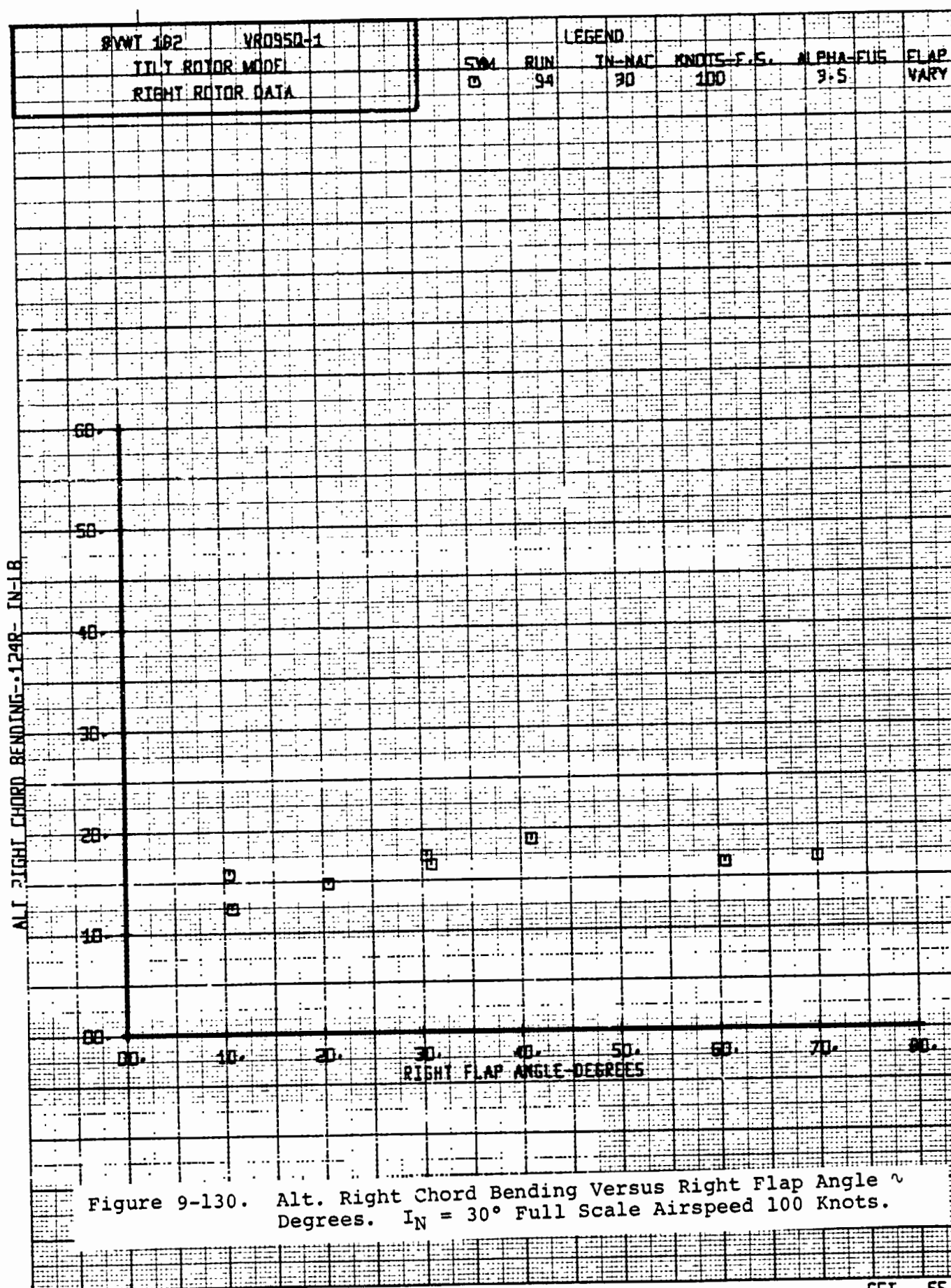
Figure 9-127. Alt. Left Chord Bending Versus Left Flap Angle ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.

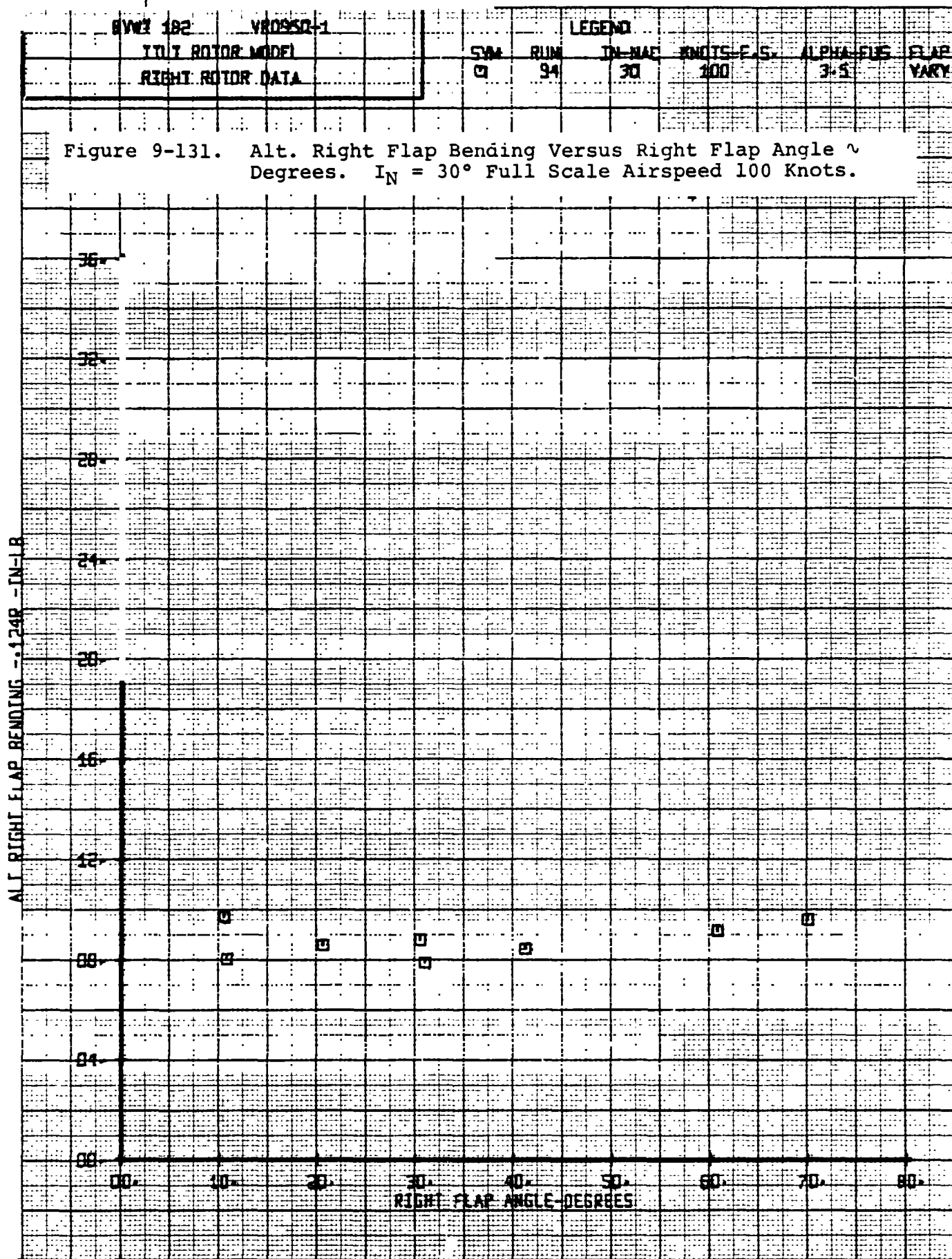


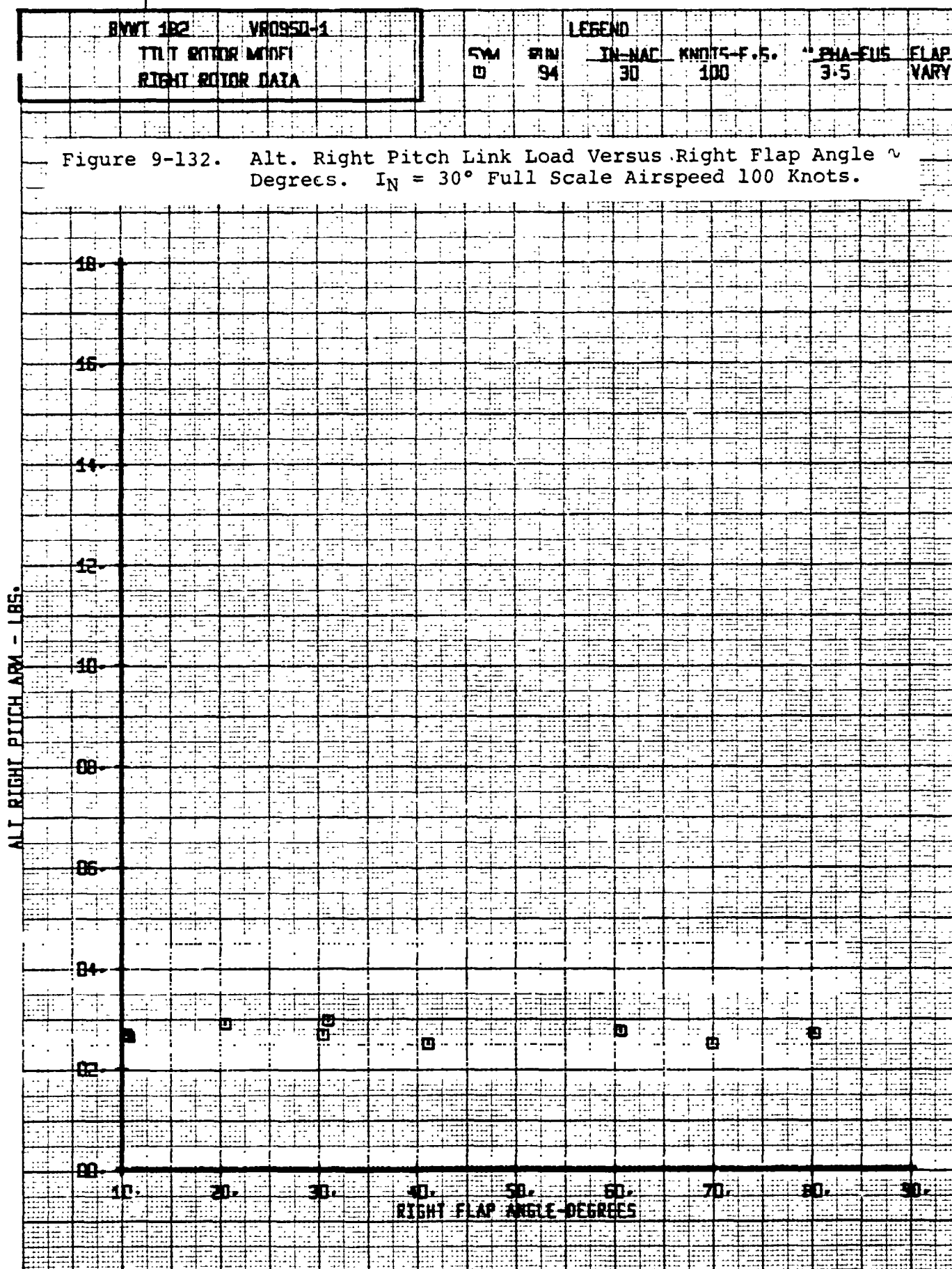
| | | | | | | | | | |
|-----------------|----------|--------|-----|--------|------------|-----------|------|--|--|
| BVWT 182 | VROSSO-1 | LEGEND | | | | | | | |
| YLL ROTOR MODEL | | S | RUN | TR-MAC | KNOTS-F.S. | ALPHA-FLS | FL | | |
| LEFT ROTOR DATA | | 0 | 94 | 30 | 100 | 3.5 | VARY | | |

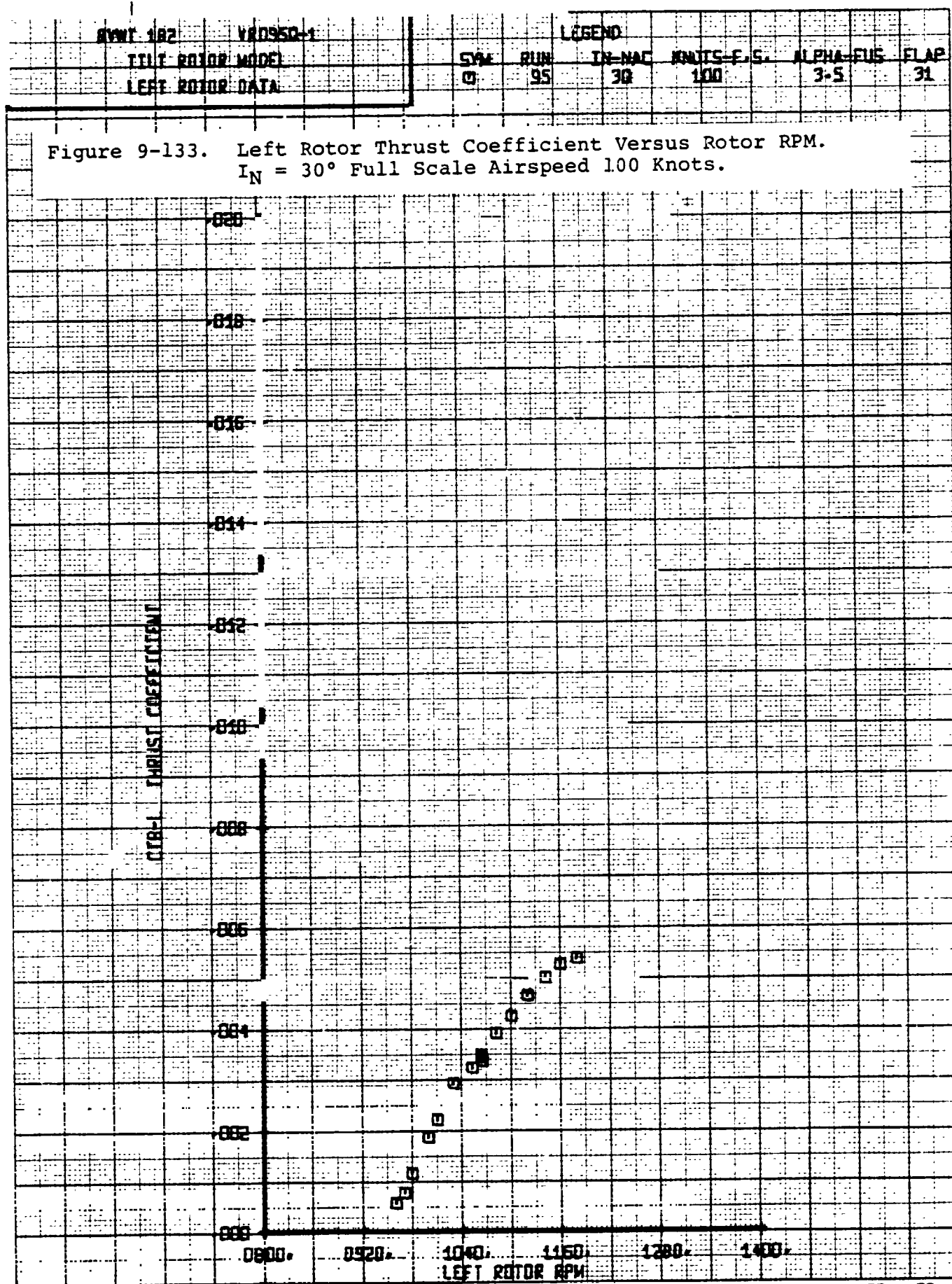
Figure 9-129. Alt. Left Pitch Link Load Versus Left Flap Angle ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.

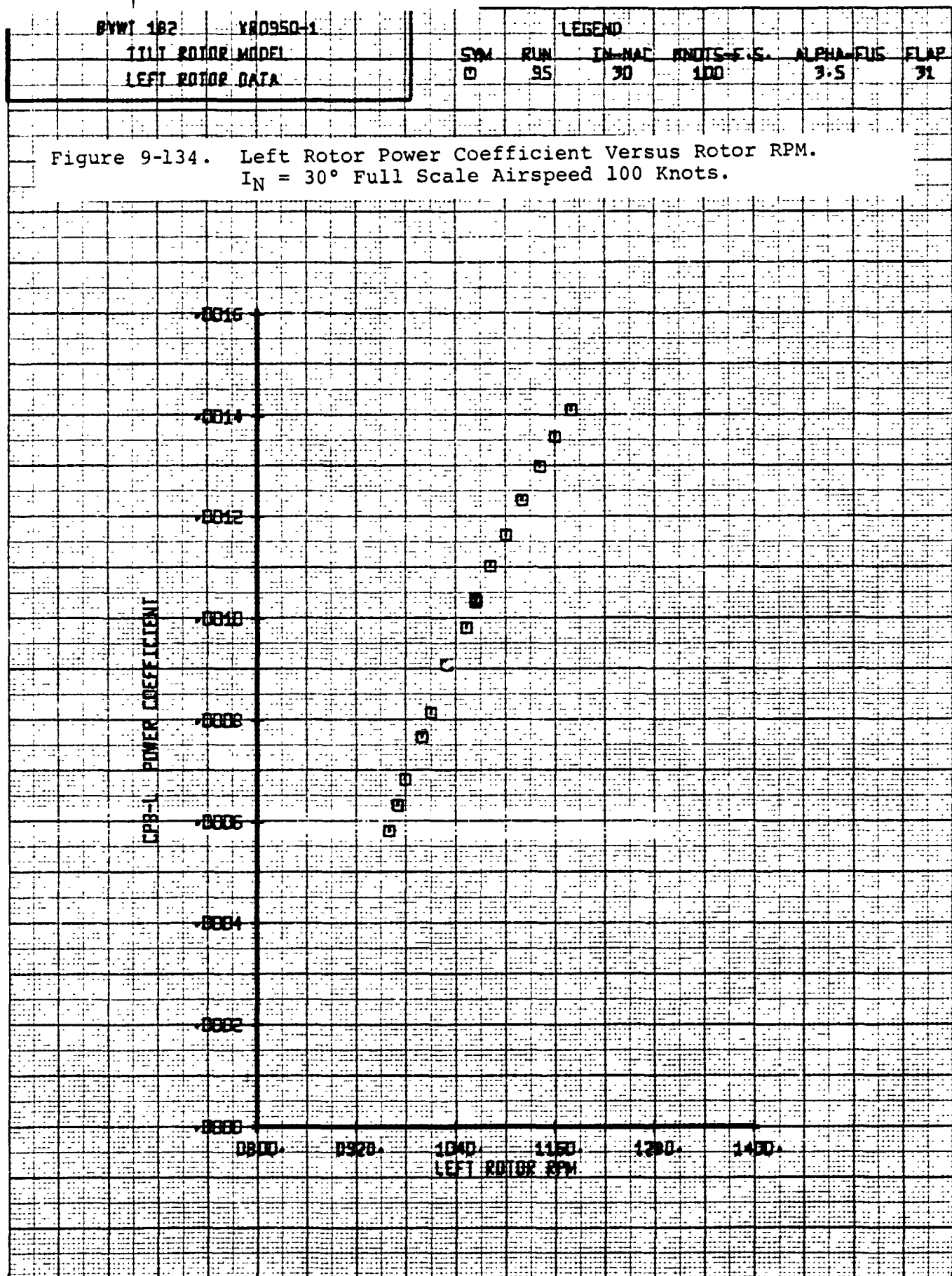






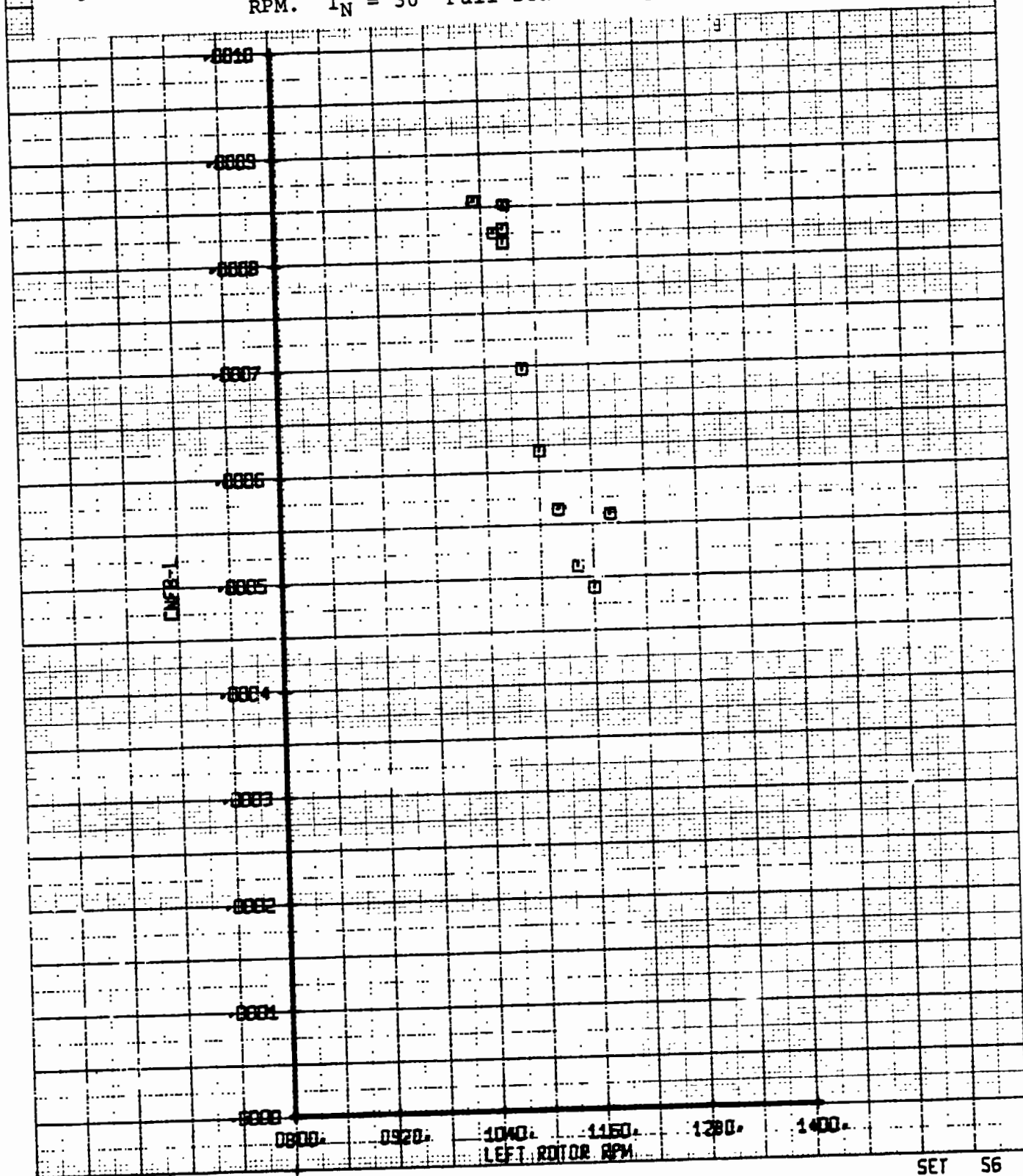


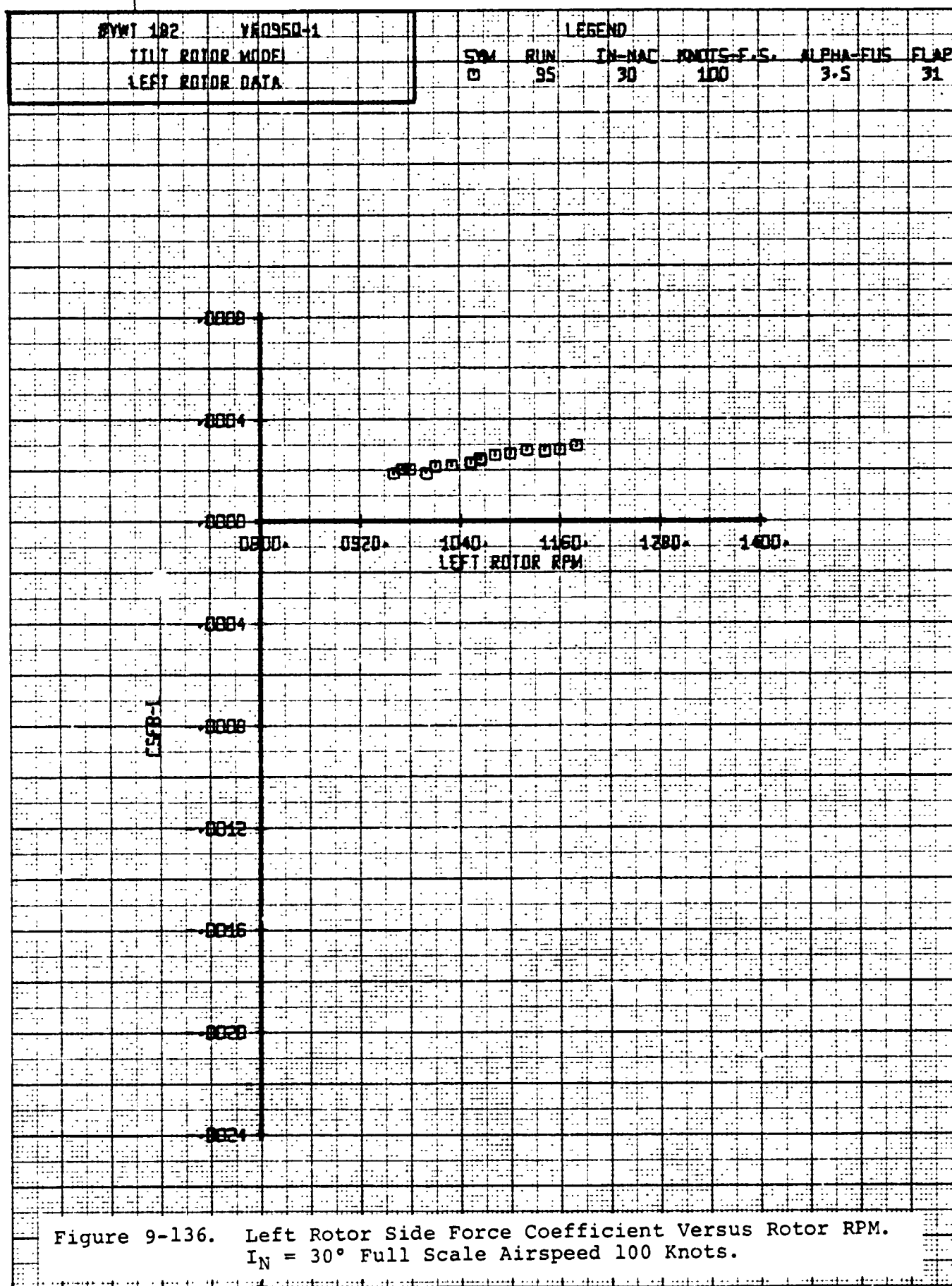


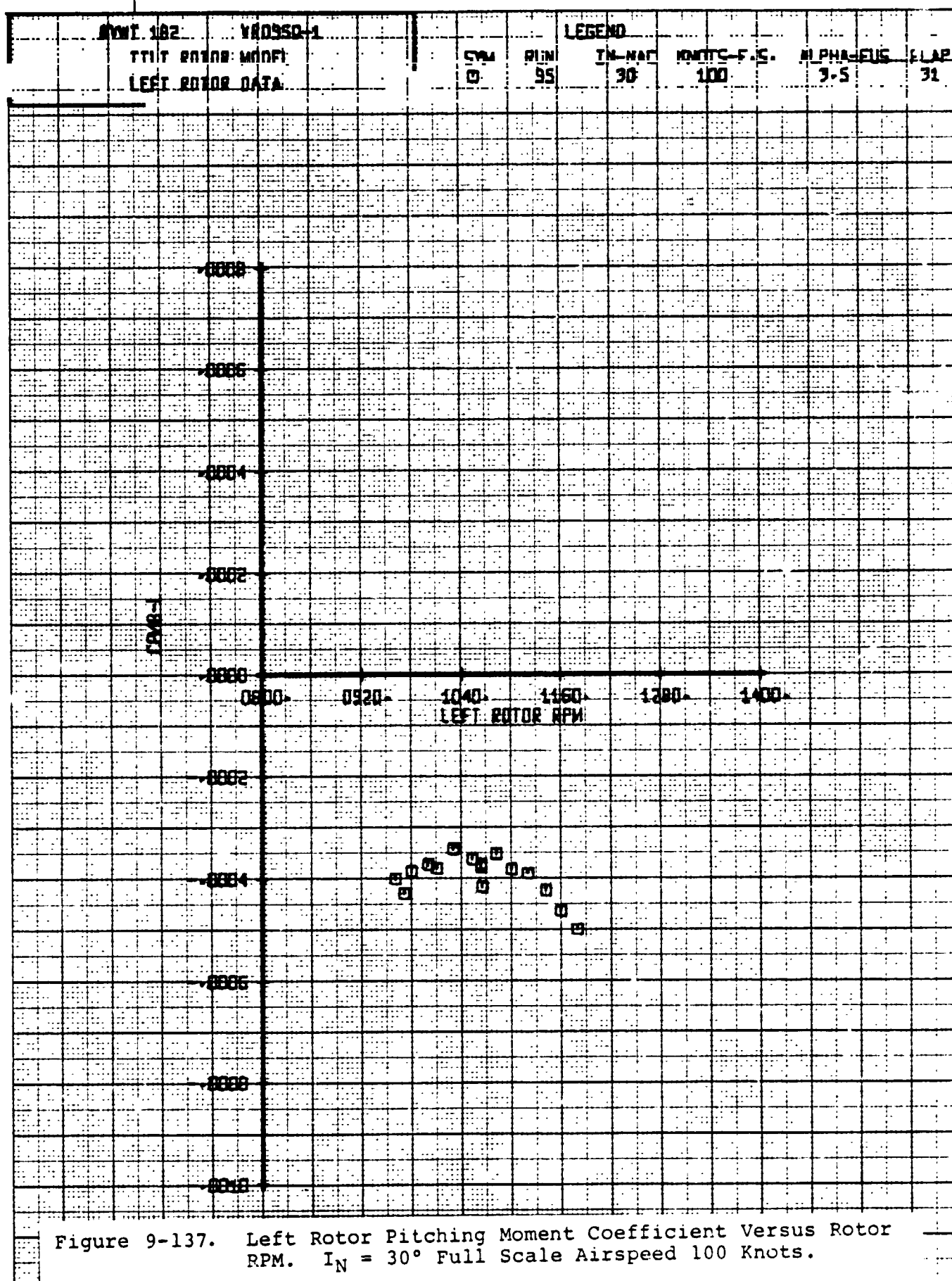


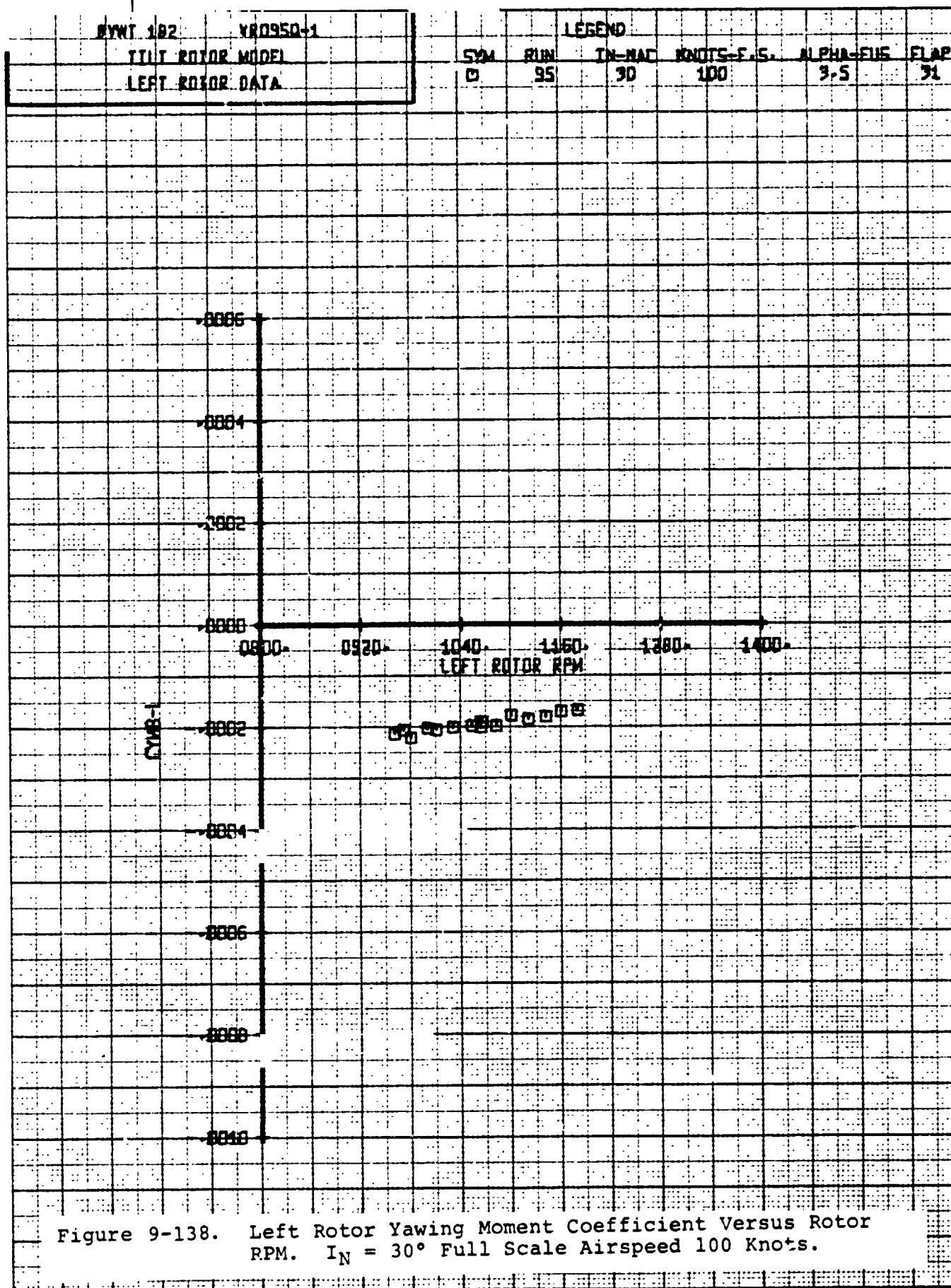
| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | YN0950-1 | LEGEND | | | | |
| TILT ROTOR MODEL | | SYM | RUN | IN-MAC | KNOTS F.S. | ALPHA-FUS |
| LEFT ROTOR DATA | | D | 95 | 30 | 100 | 3.5 |
| | | | | | | FLAP 31 |

Figure 9-135. Left Rotor Normal Force Coefficient Versus Rotor RPM. $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.



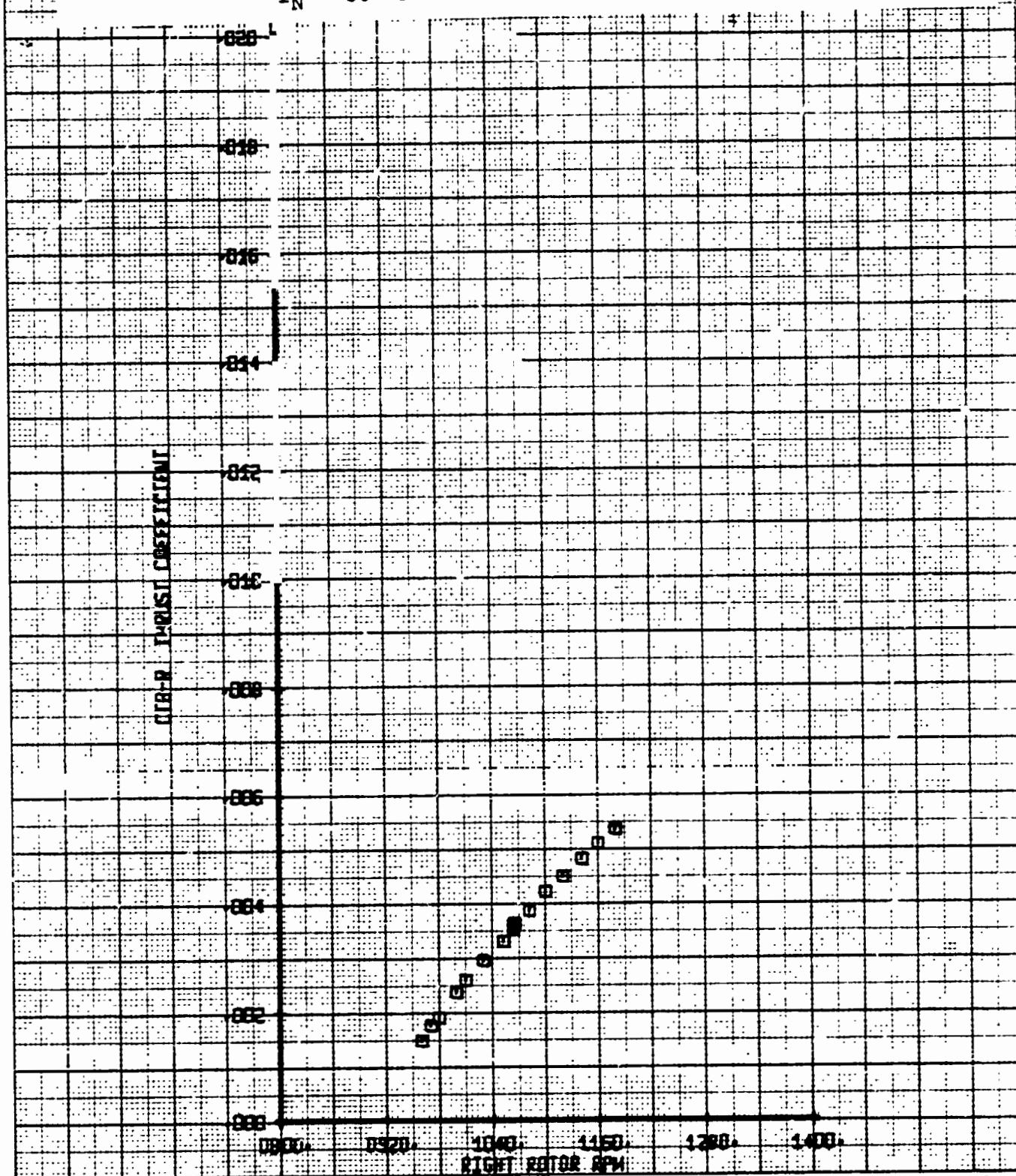


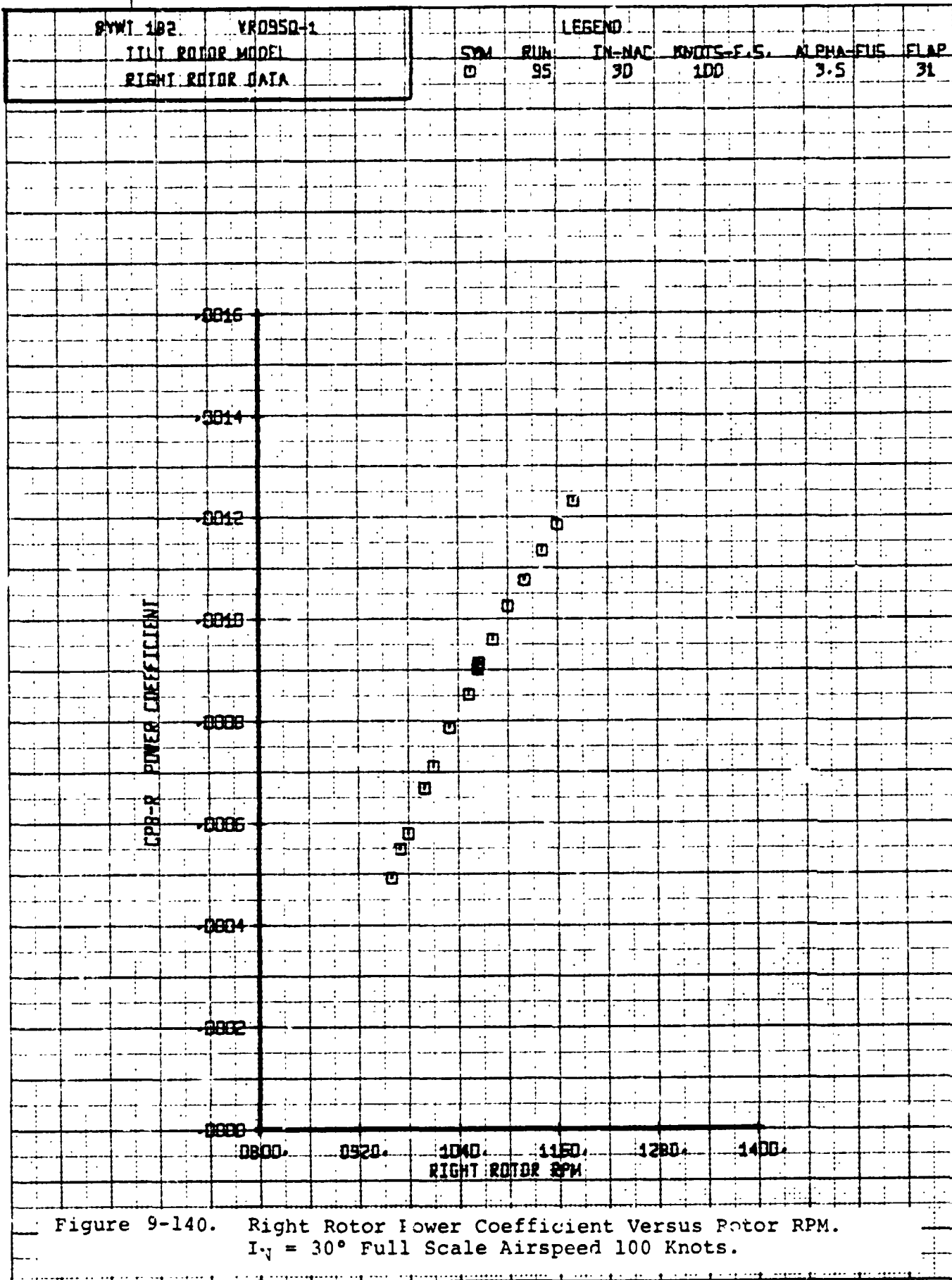


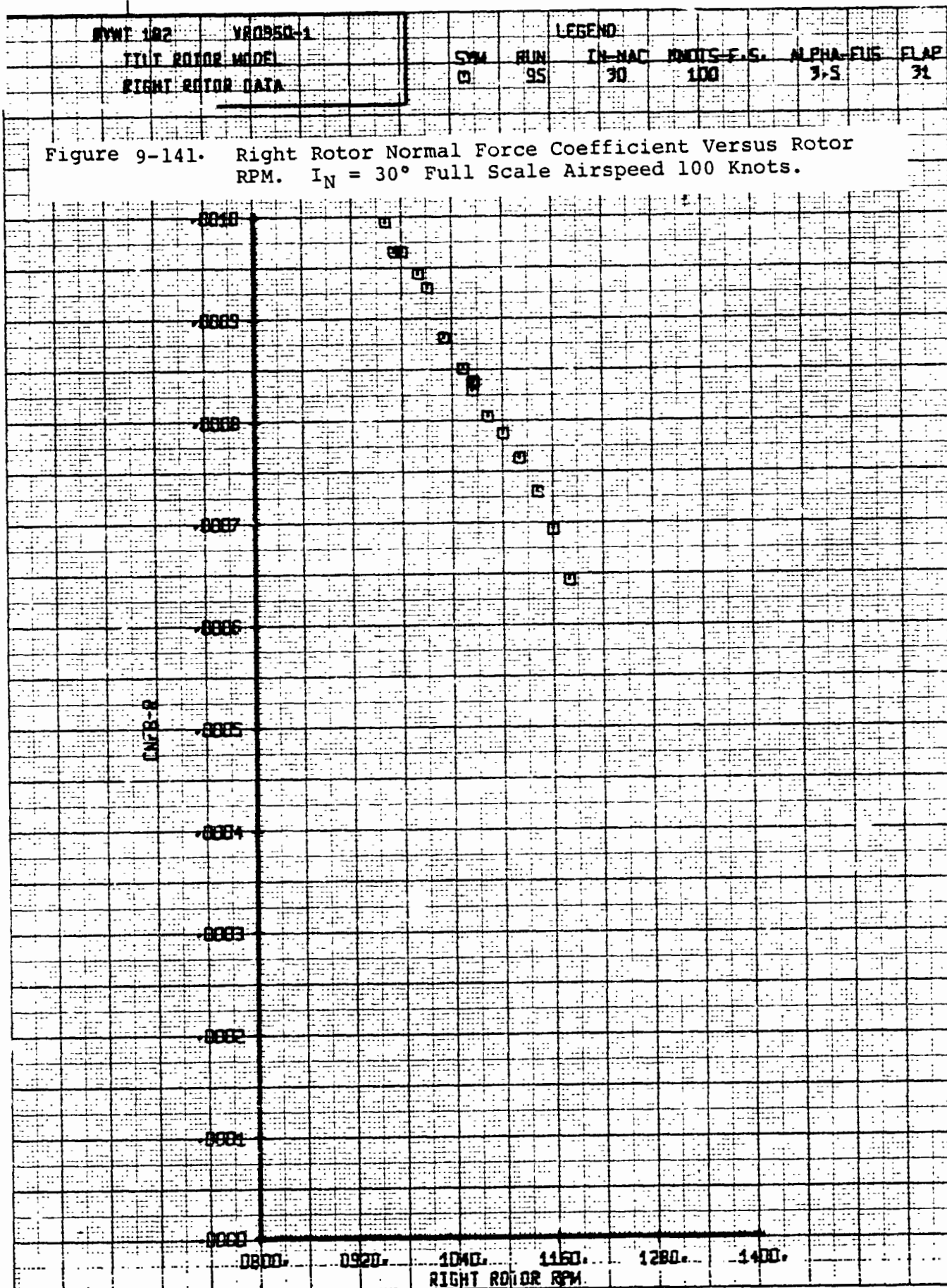


| | | | | | | |
|------------------|----------|--------|-----|--------|-------------|-----------|
| BYWT 182 | 100950-1 | LEGEND | | | | |
| TITLE ROTOR MODE | | SYM | RUN | IN-NAE | POINTS-E.S. | ALPHA-EUS |
| RIGHT ROTOR DATA | | 0 | 95 | 30 | 100 | 3-5 |
| | | | | | | FLAP 31 |

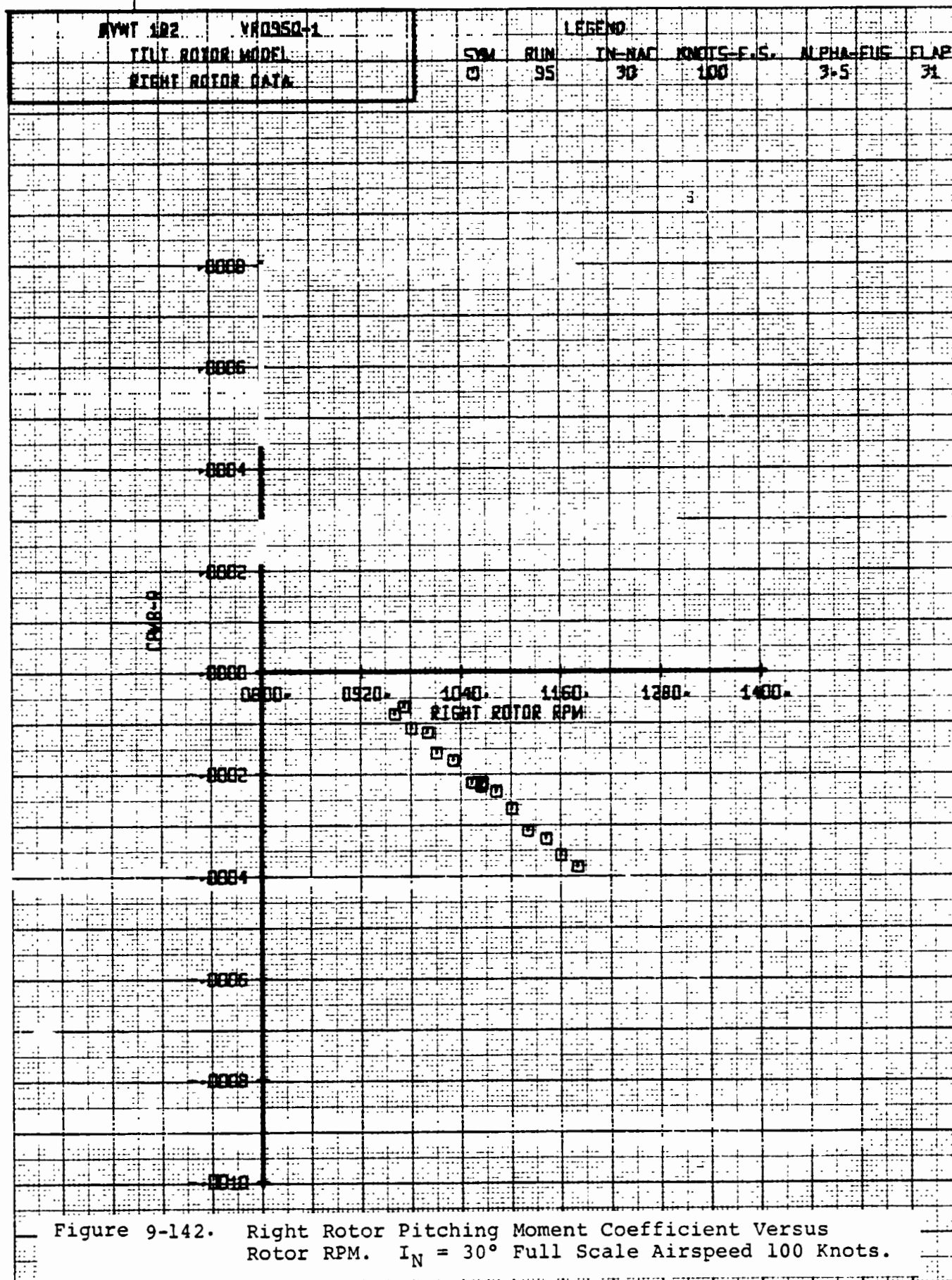
Figure 9-139. Right Rotor Thrust Coefficient Versus Rotor RPM.
 $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.



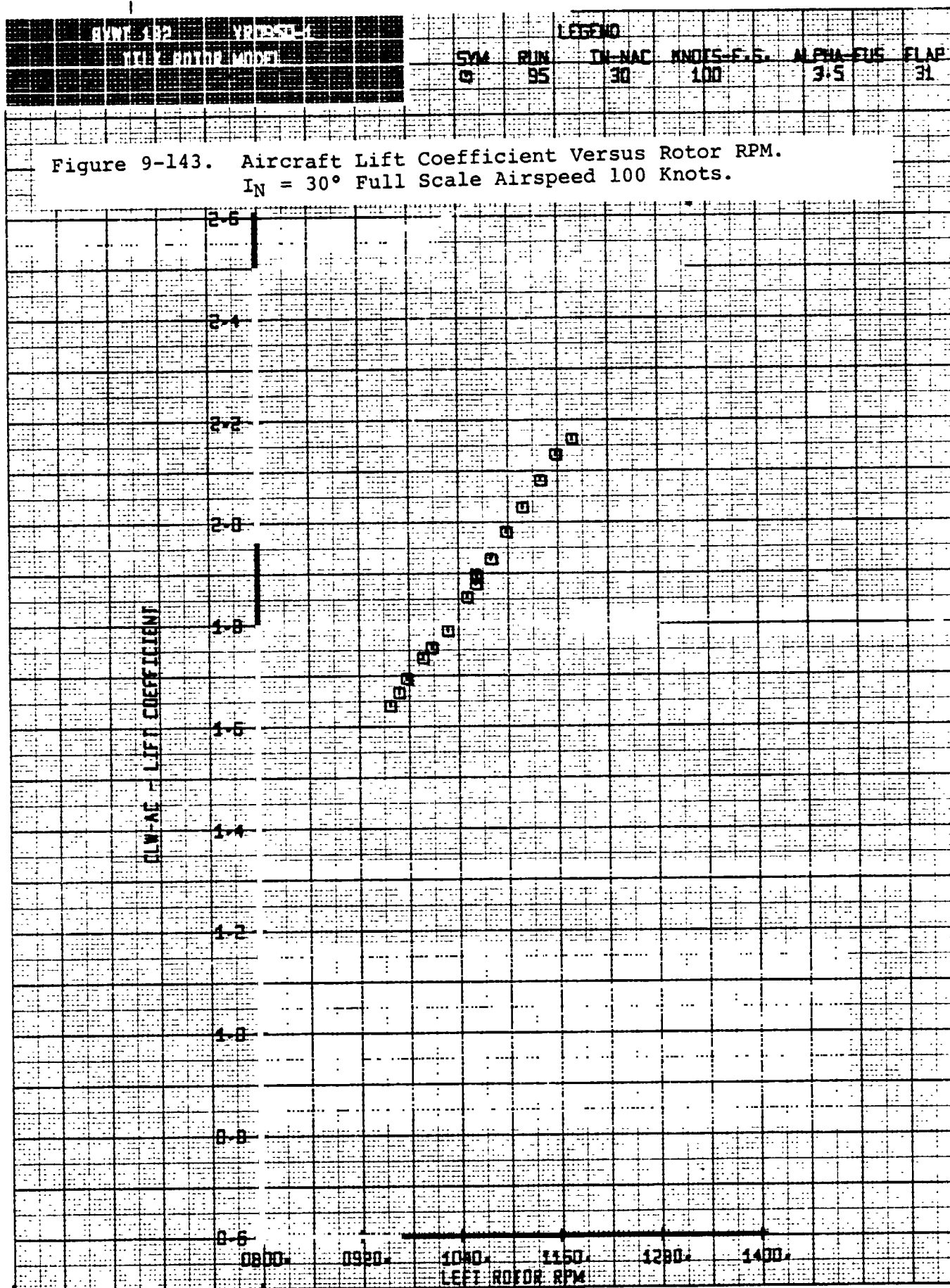


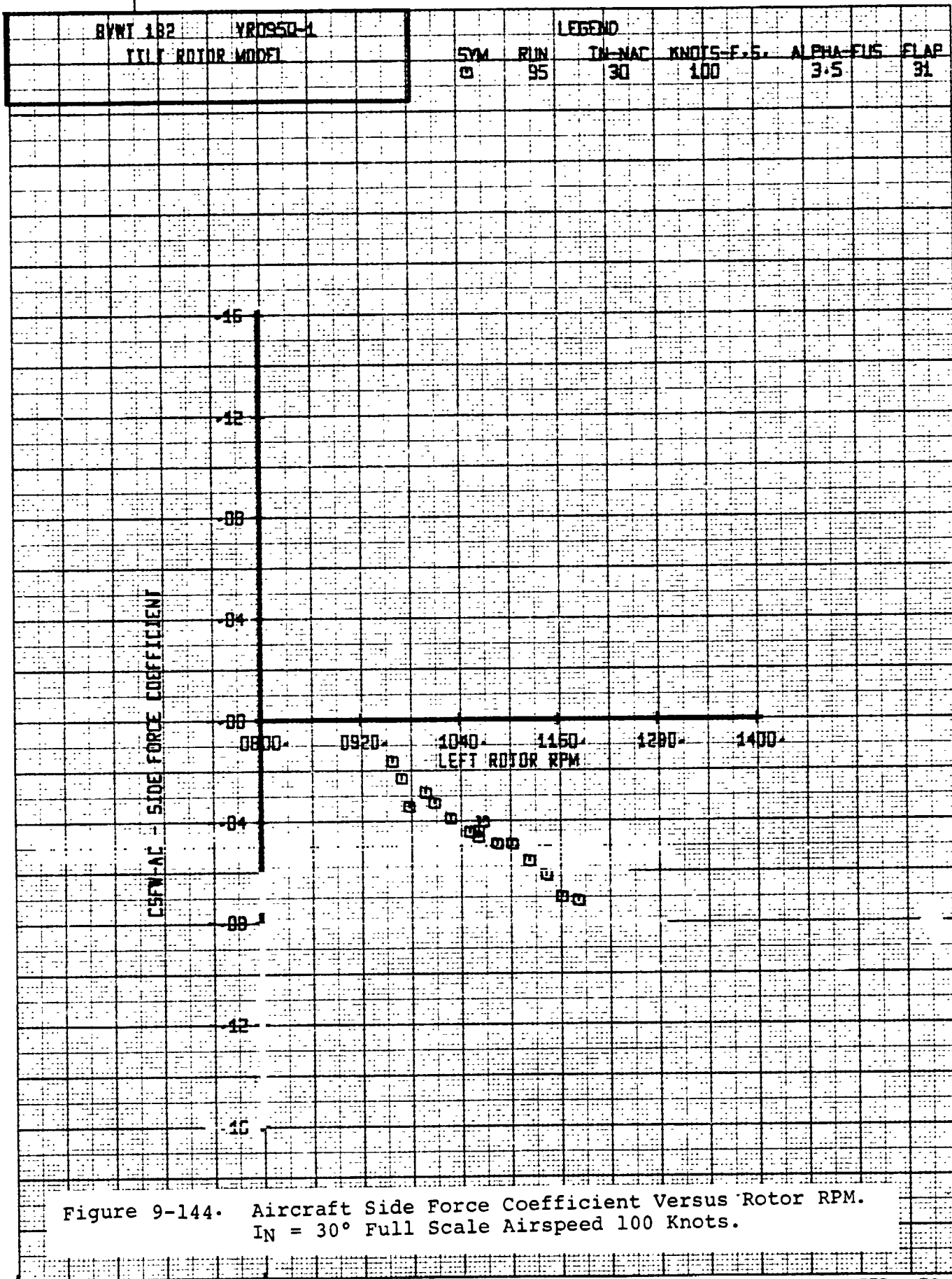


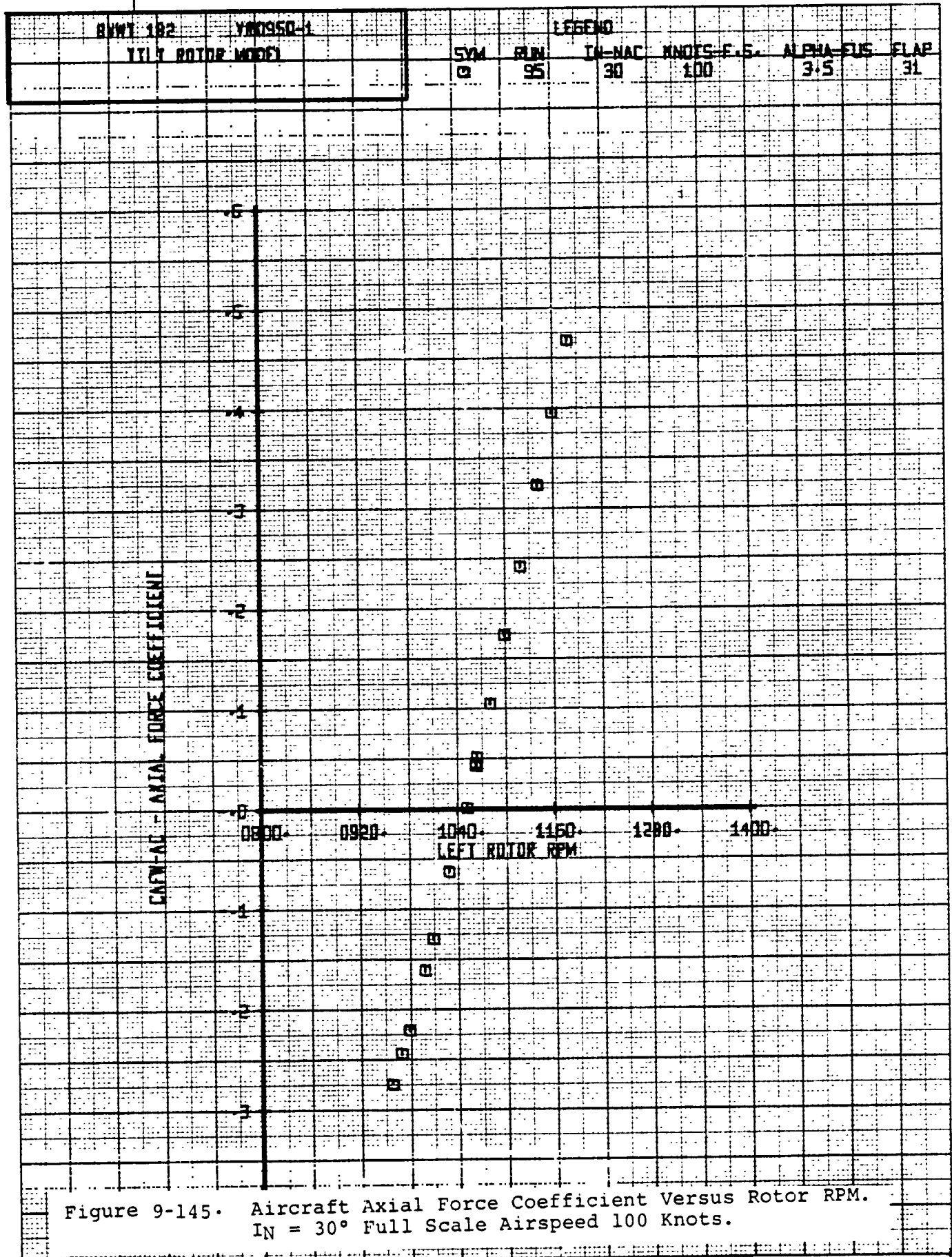
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Refer to Section 3.0



Data Deleted
Refer to Section 3.0







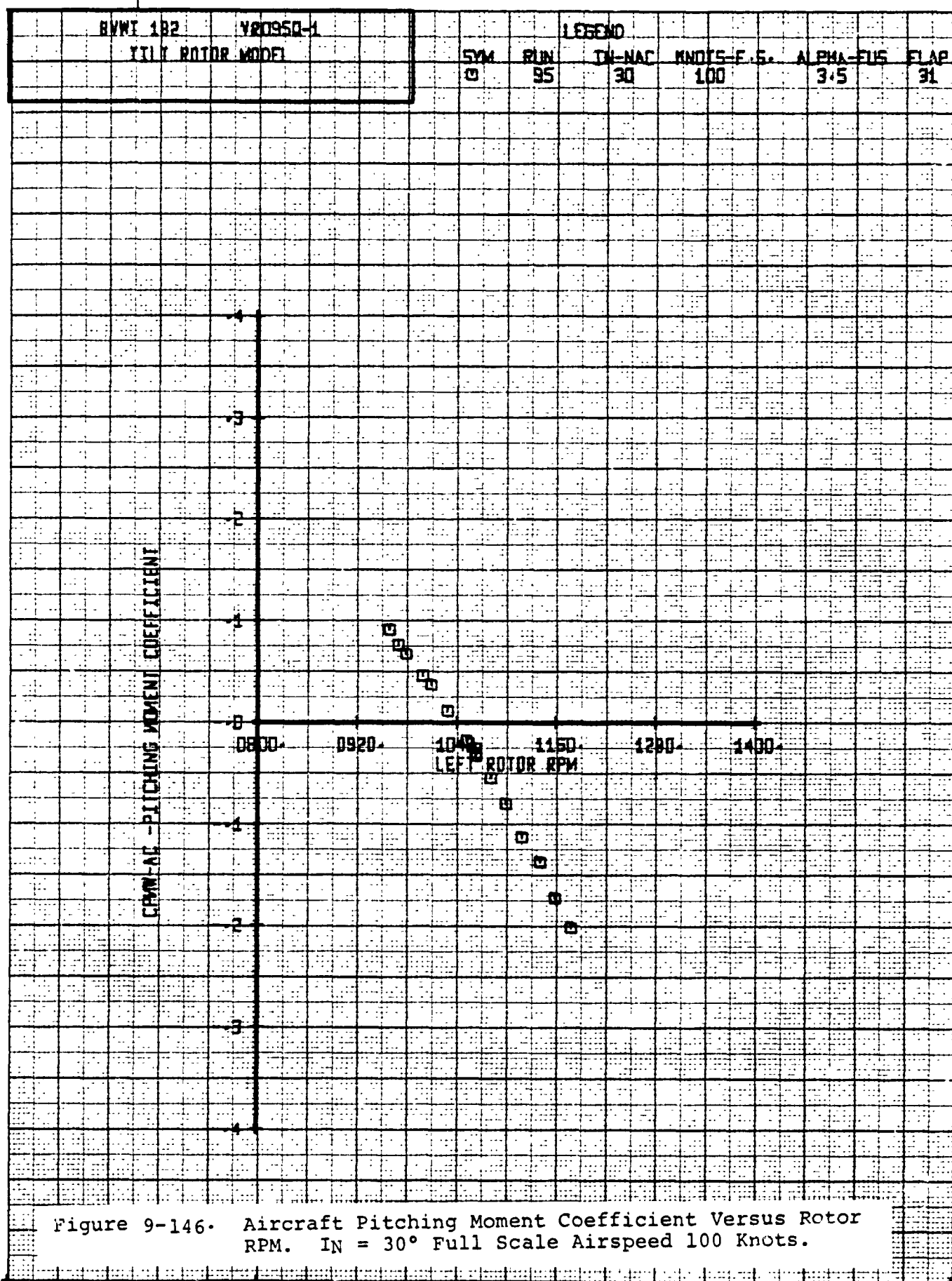
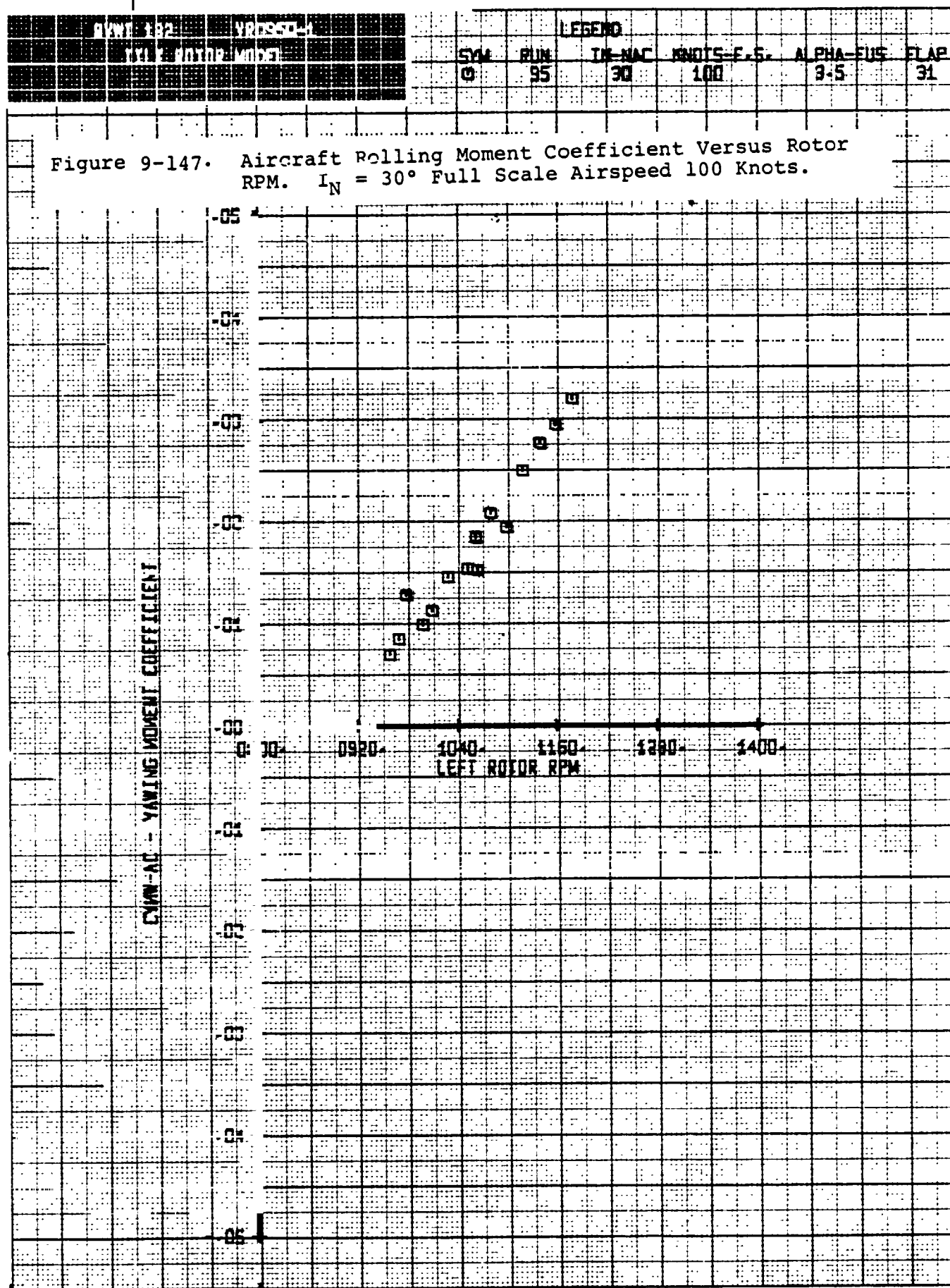
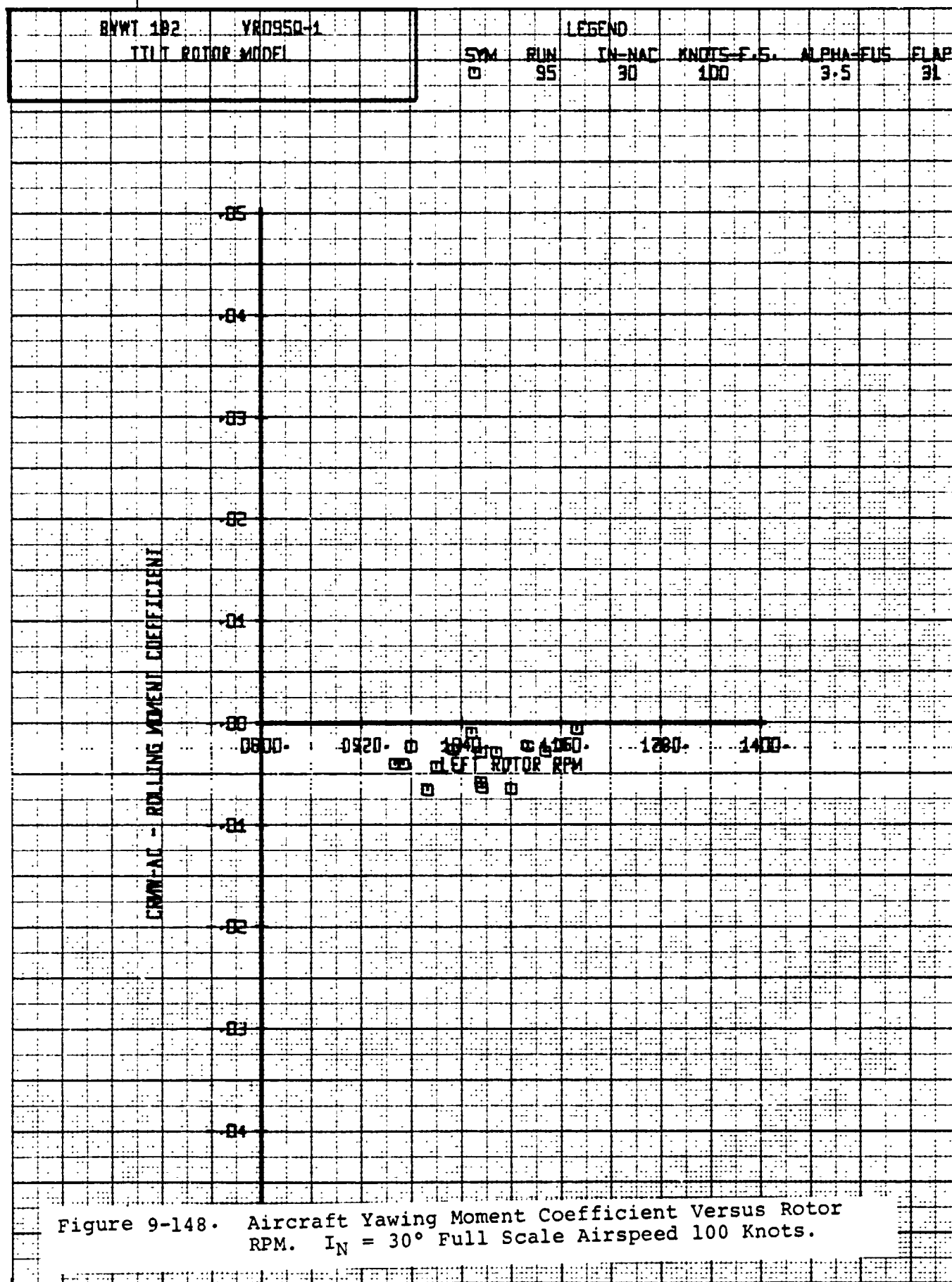
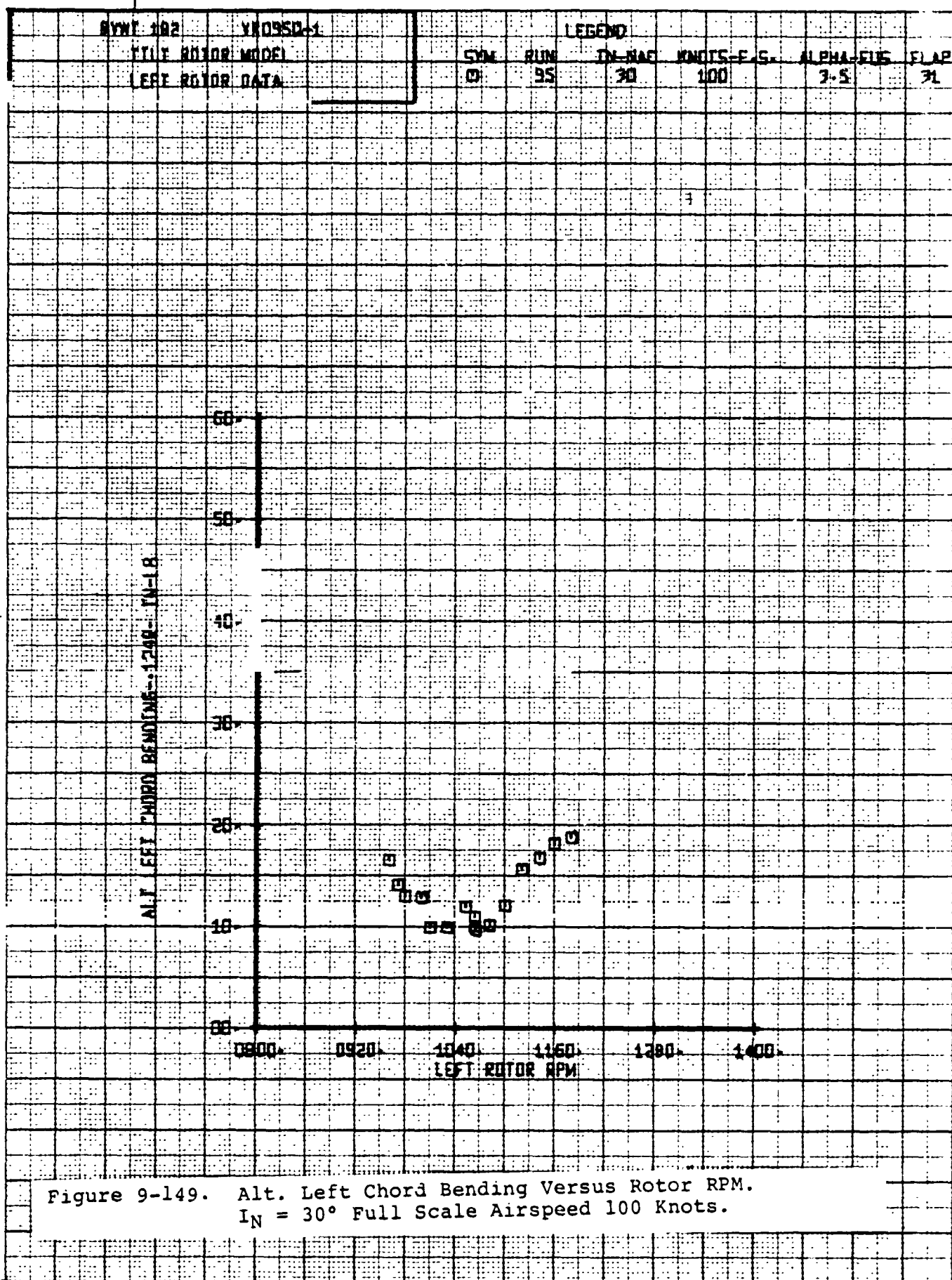
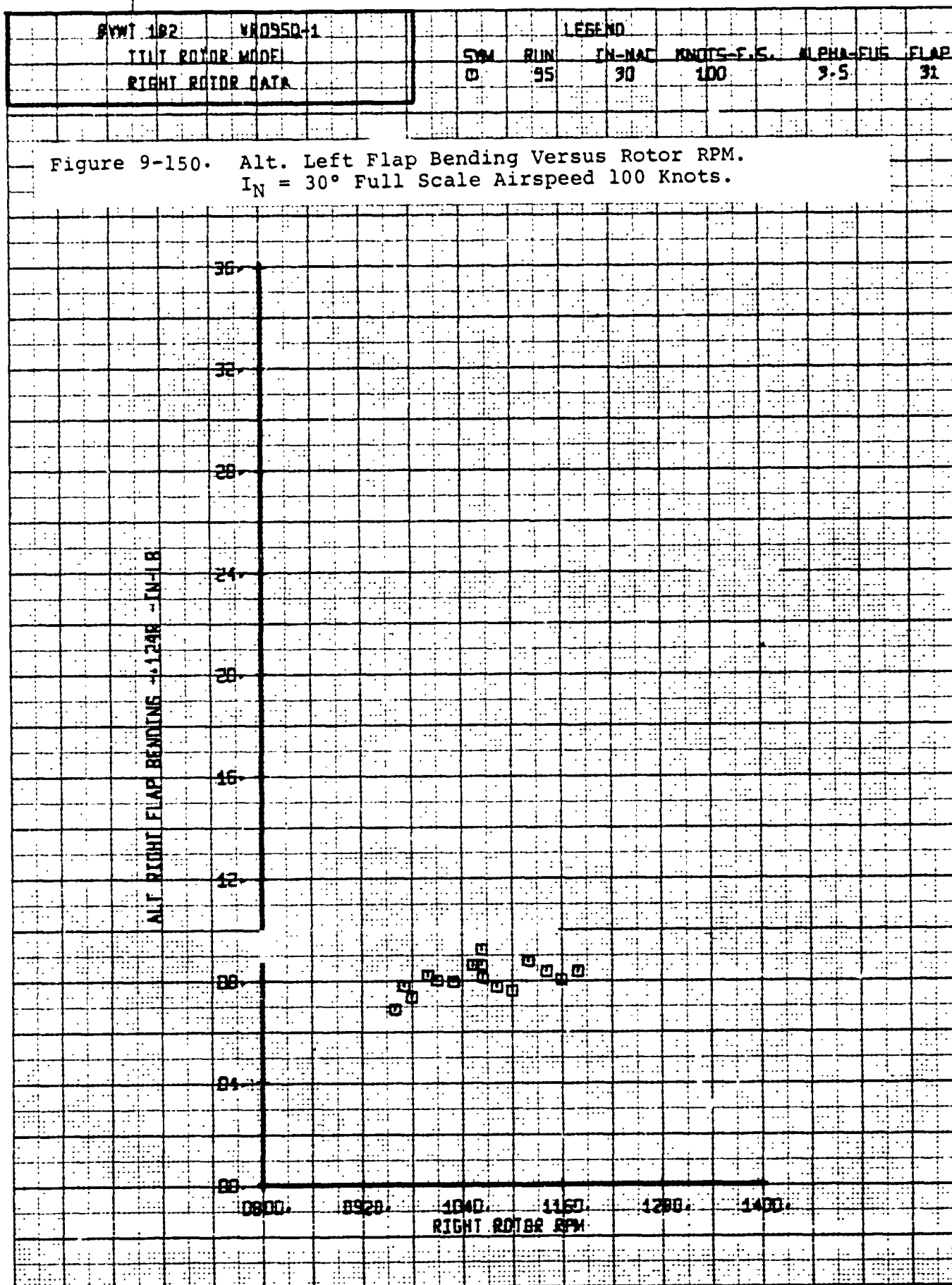


Figure 9-146. Aircraft Pitching Moment Coefficient Versus Rotor RPM. IN = 30° Full Scale Airspeed 100 Knots.



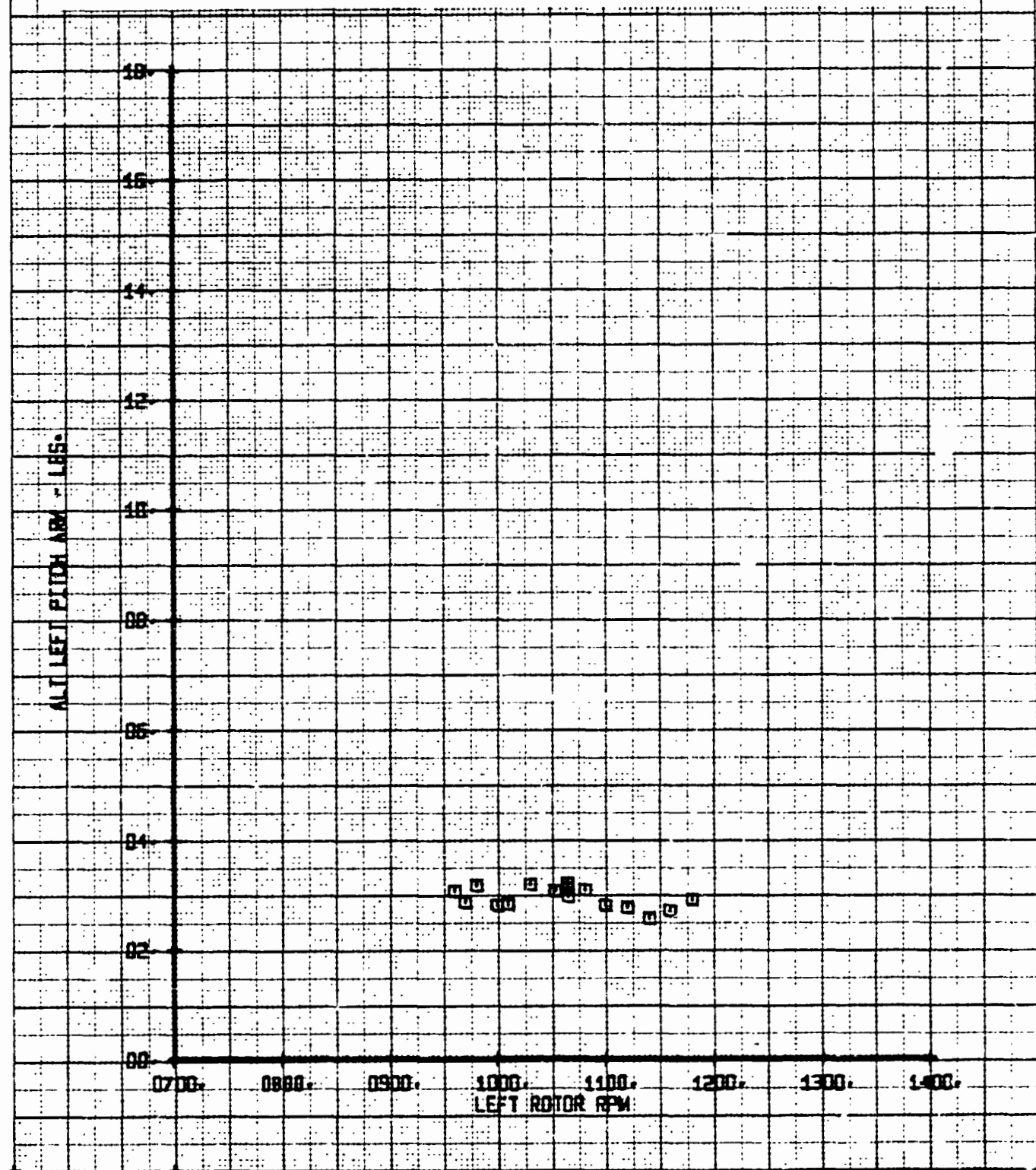






| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BYWT 182 | YD0550-1 | LEGEND | | | | |
| TILT ROTOR MODEL | | SYM | R/N | IN-NAC | KNOTS-F.S. | ALPHA-DEG |
| LEFT ROTOR DATA | | □ | 95 | 30 | 100 | 3.5 |
| | | | | | | ELAP 31 |

Figure 9-151. Alt. Left Pitch Link Load Versus Rotor RPM.
 $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.



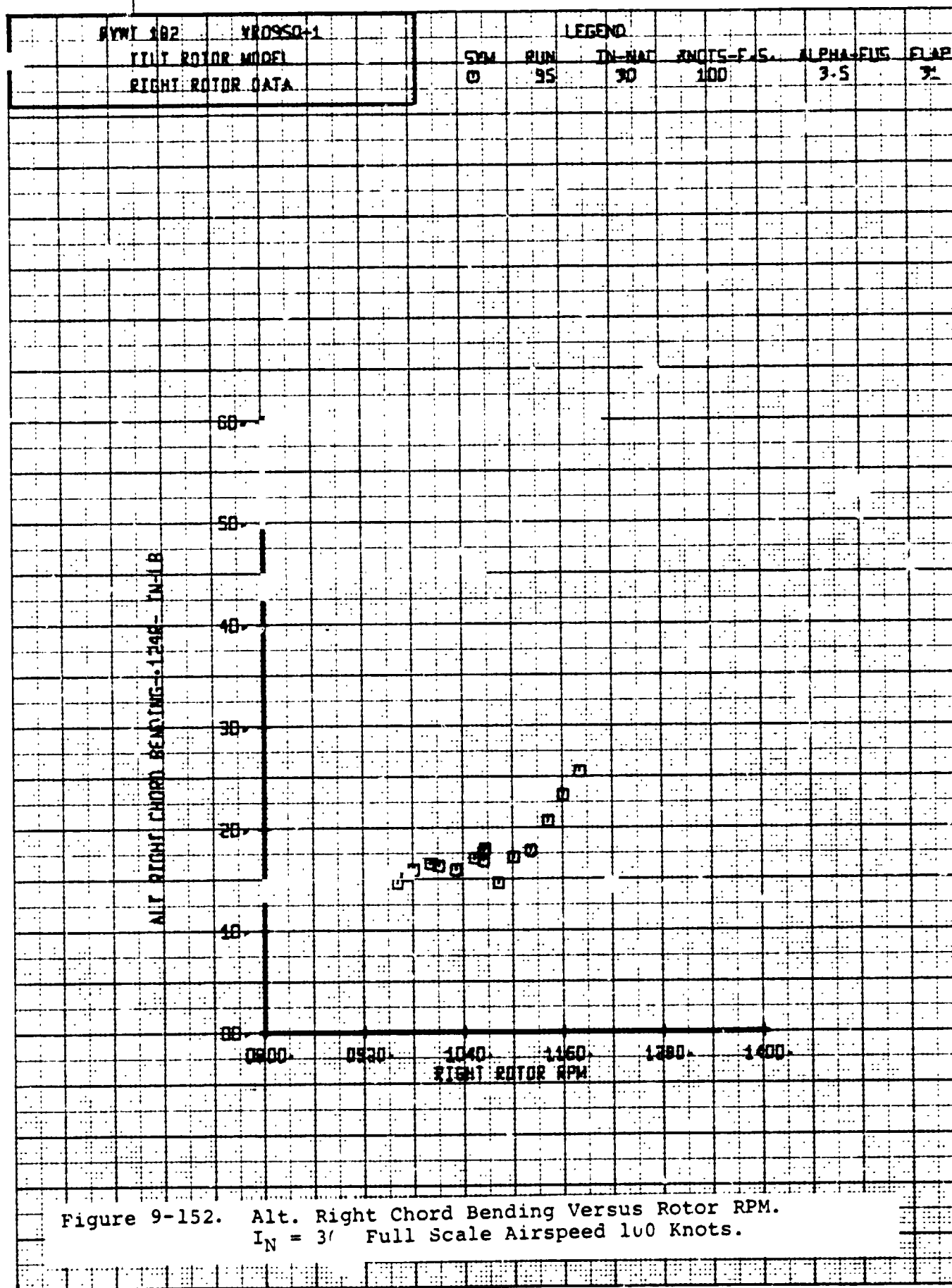
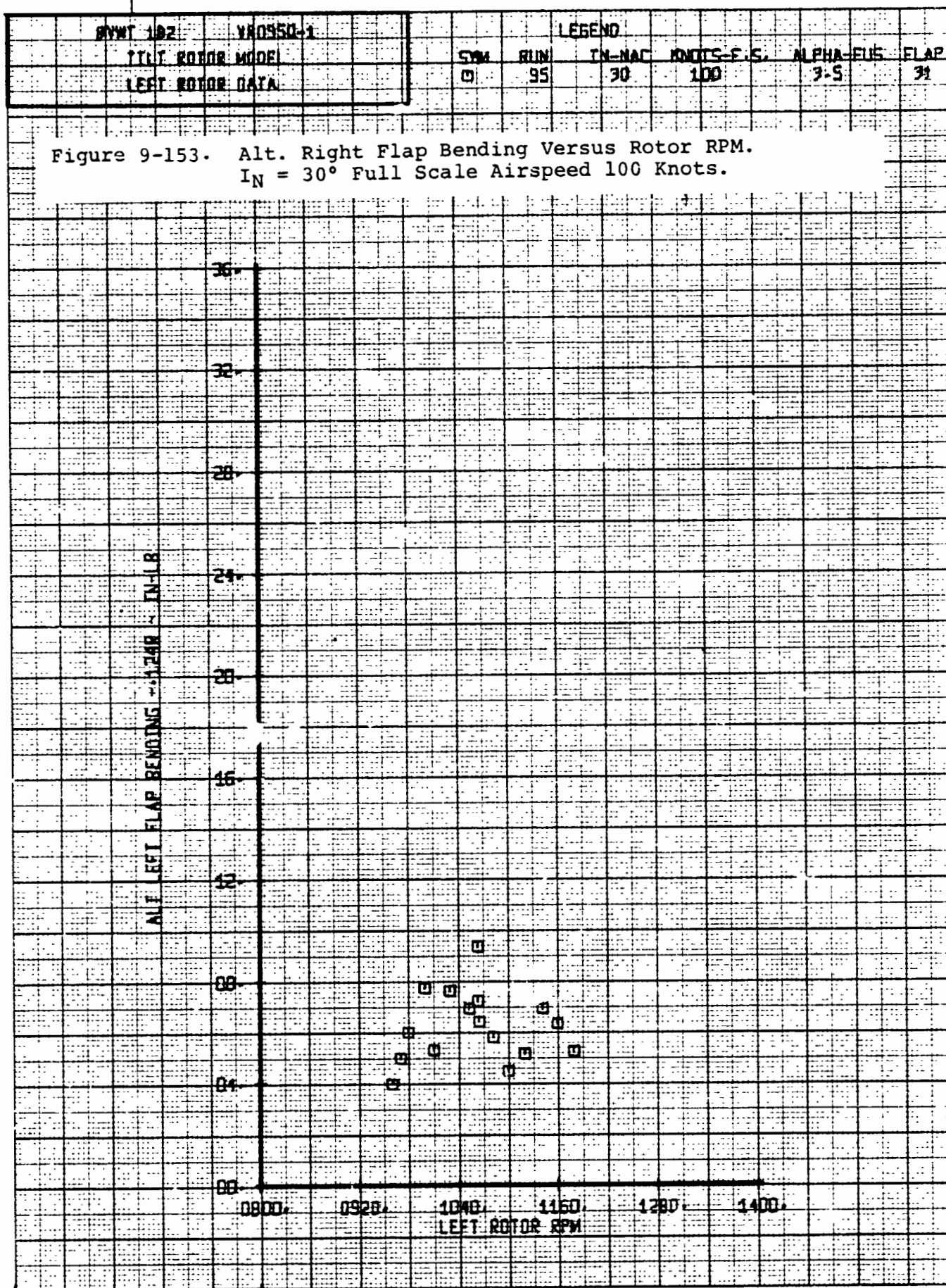
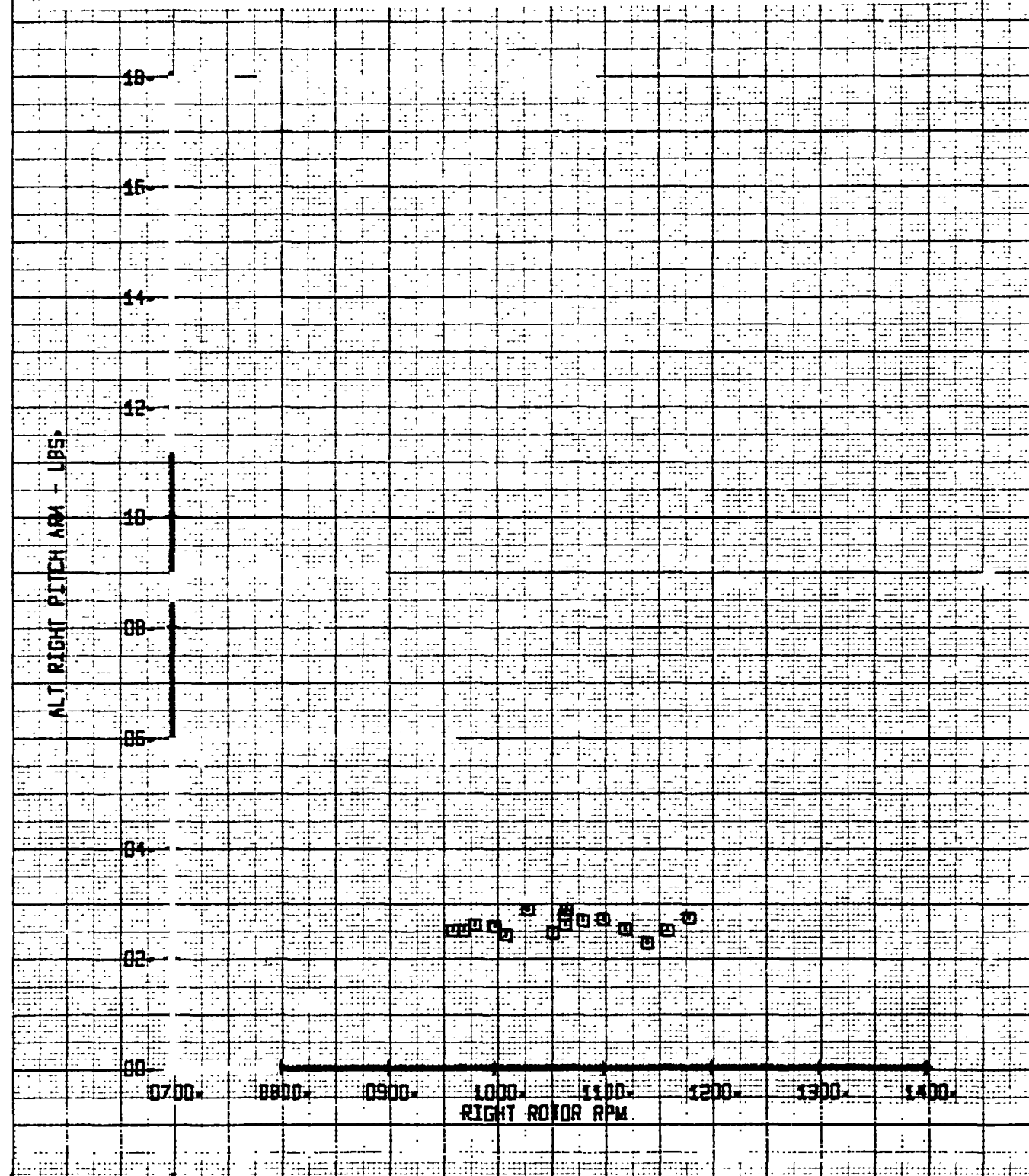


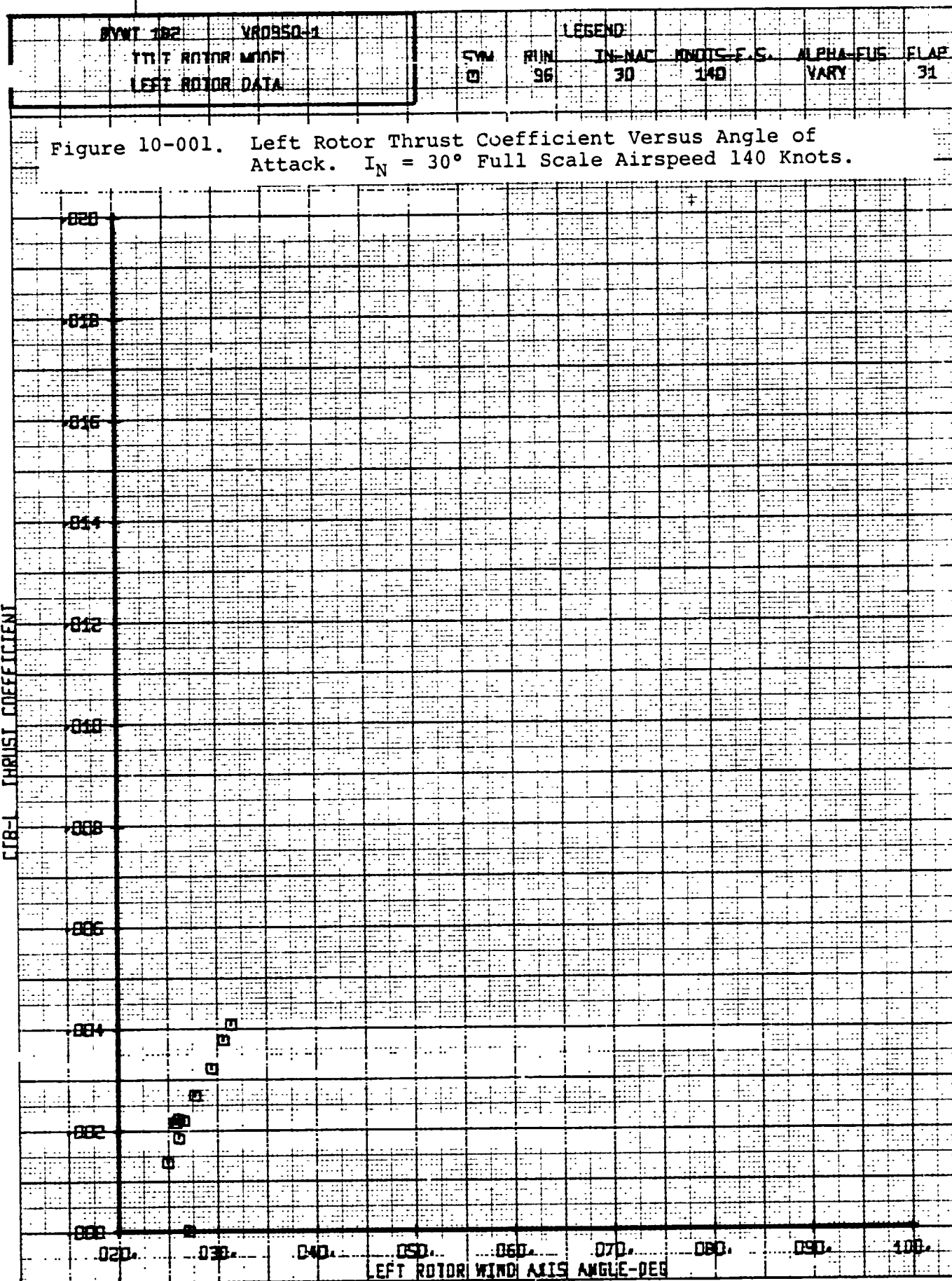
Figure 9-152. Alt. Right Chord Bending Versus Rotor RPM.
 $I_N = 3'$ Full Scale Airspeed 100 Knots.



| | | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|------|
| BVWT 182 | VR0950-1 | LEGEND | | | | | |
| TILT ROTOR MODEL | | SYM | PLN | IN-NAC | KNOTS-F.S. | ALPHA-FUS | FLAP |
| RIGHT ROTOR DATA | | 0 | 95 | 30 | 100 | 3-5 | 31 |

Figure 9-154. Alt. Right Flap Bending Versus Rotor RPM.
 $I_N = 30^\circ$ Full Scale Airspeed 100 Knots.





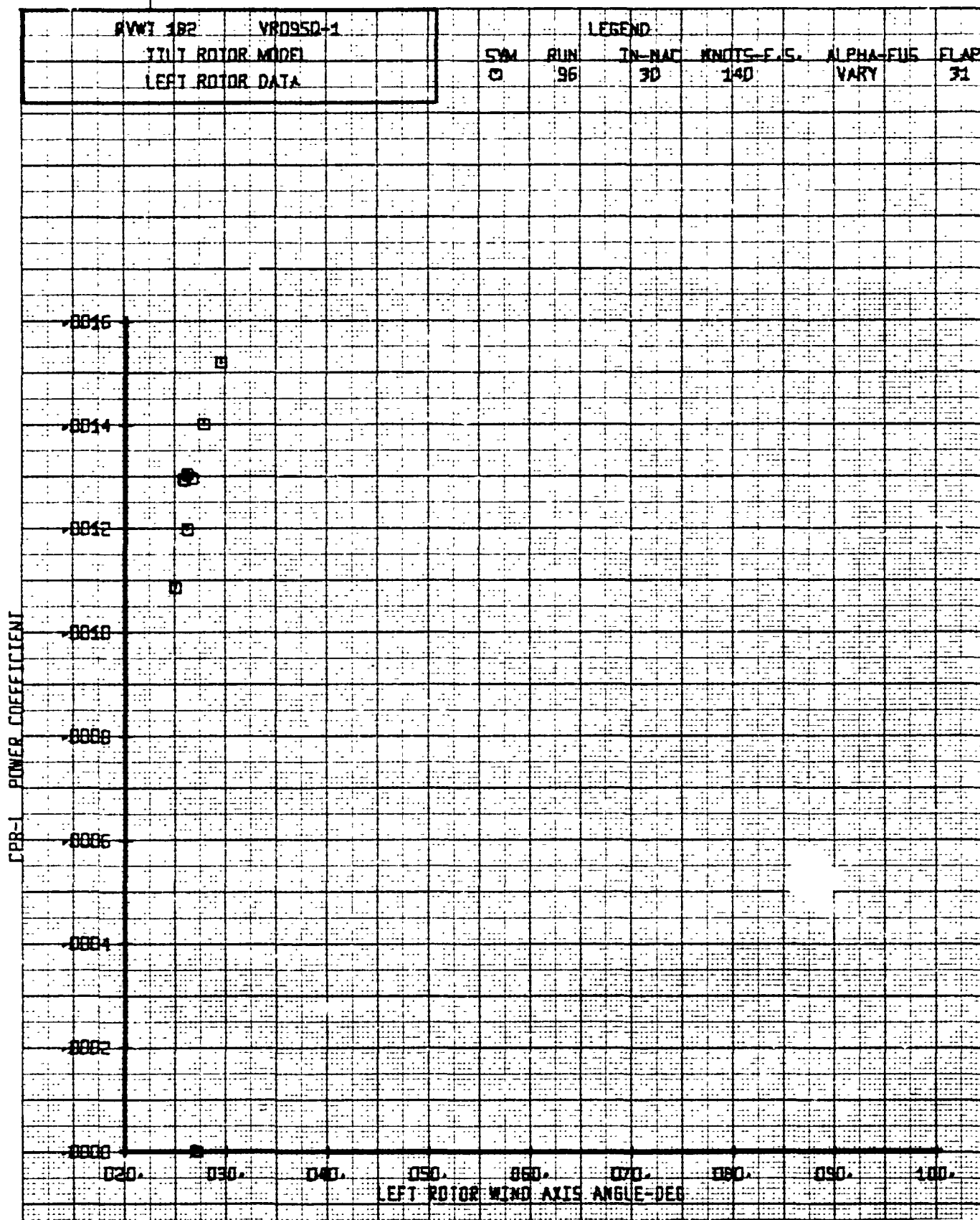
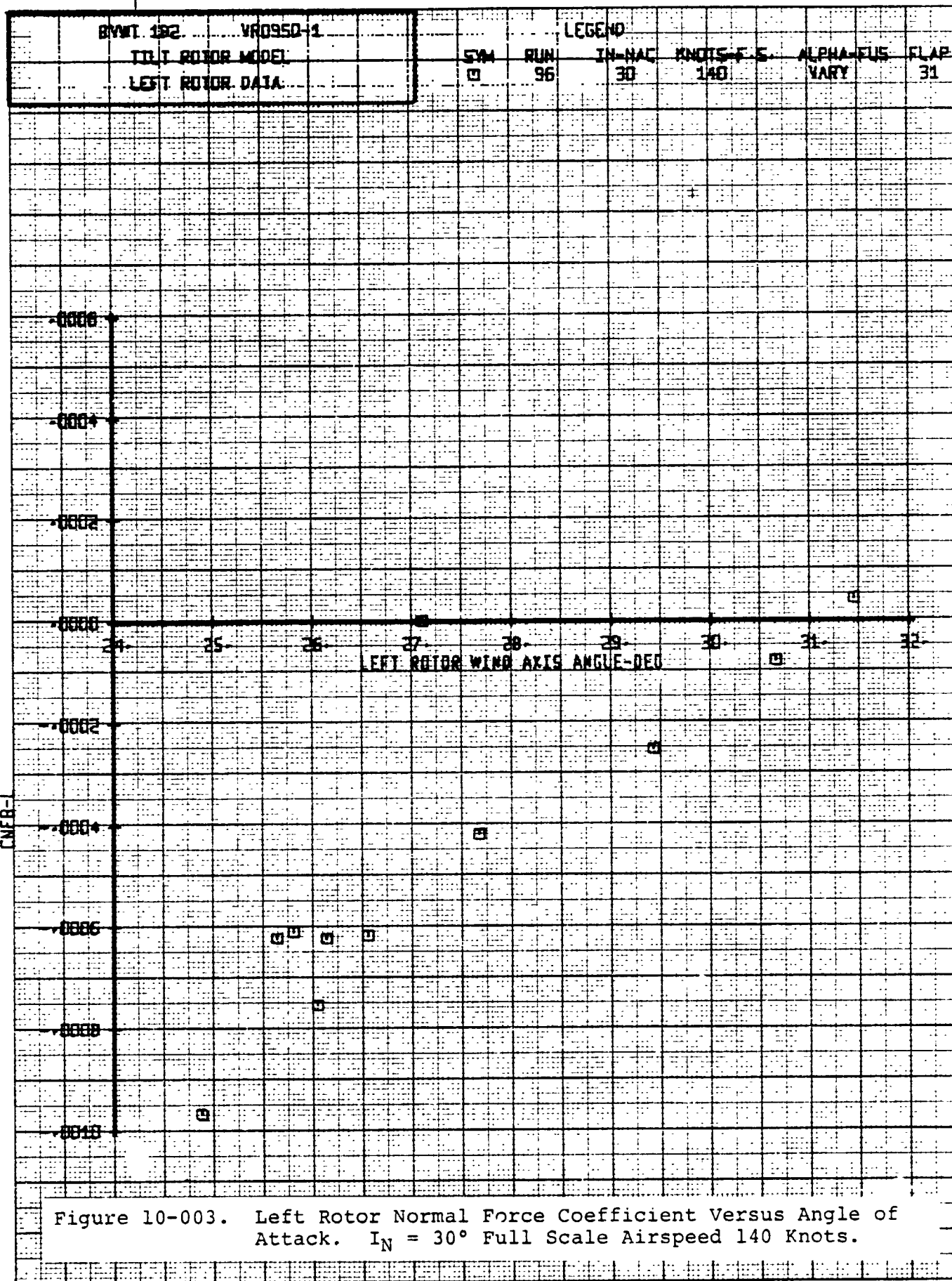
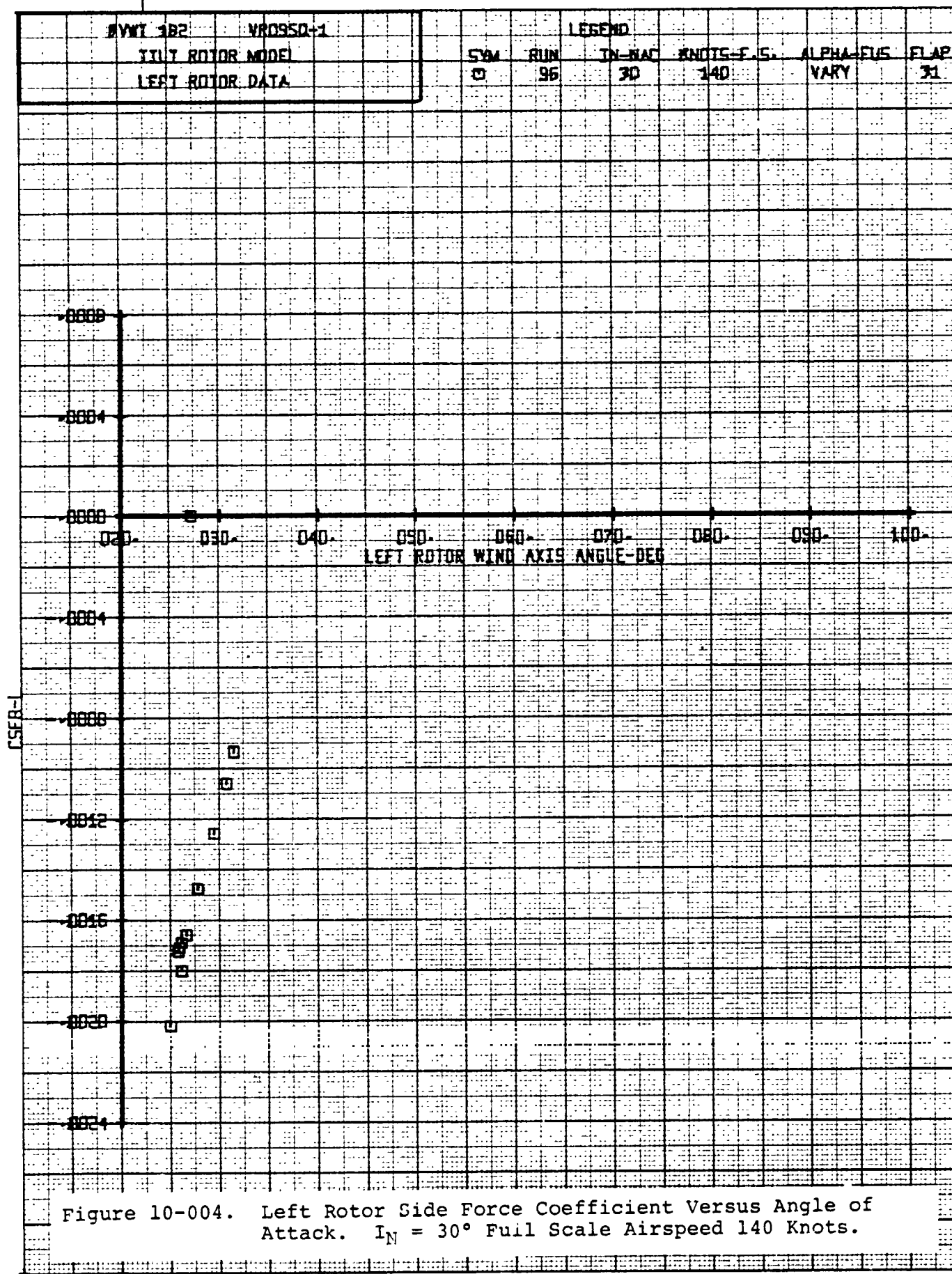
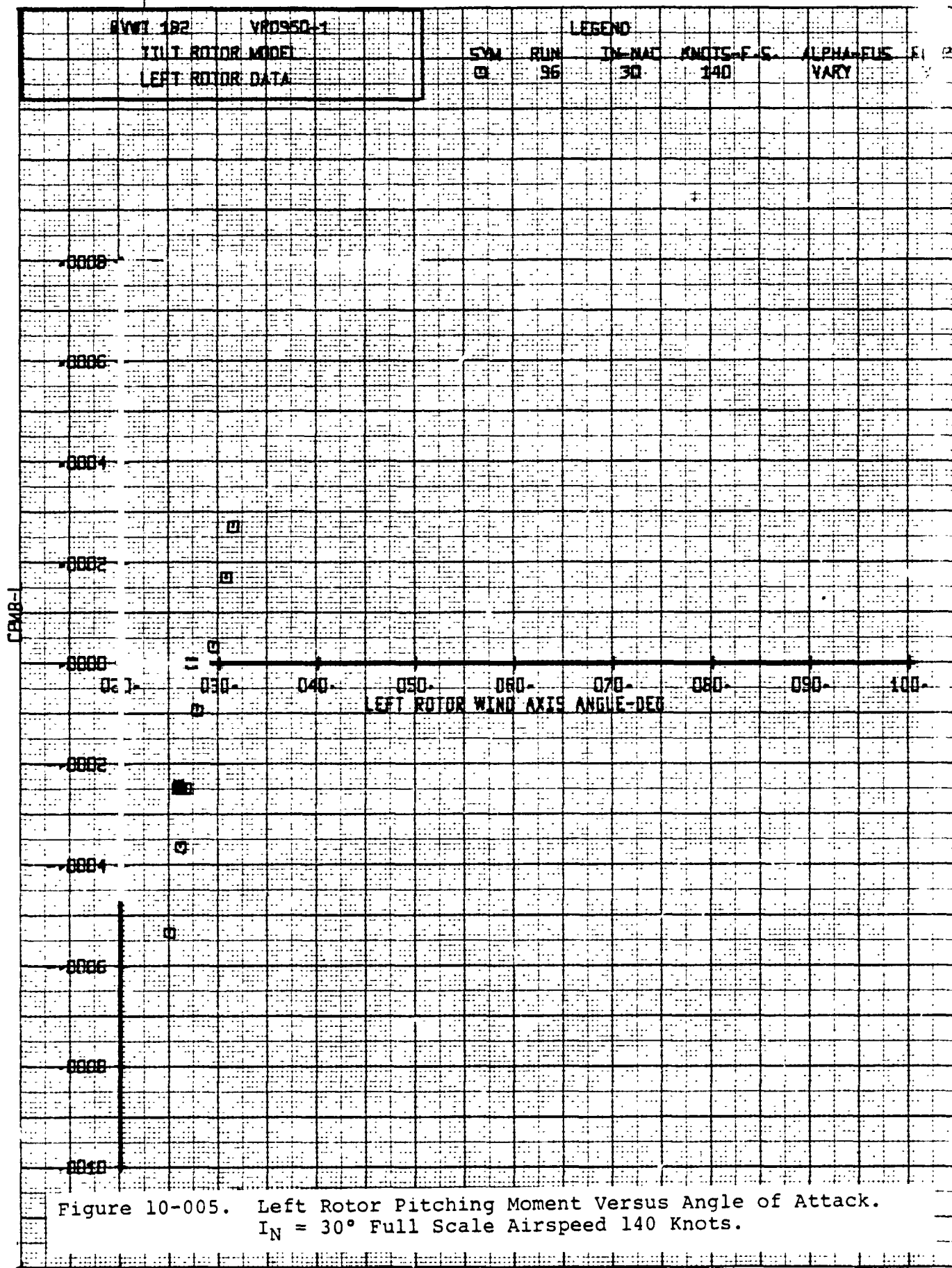
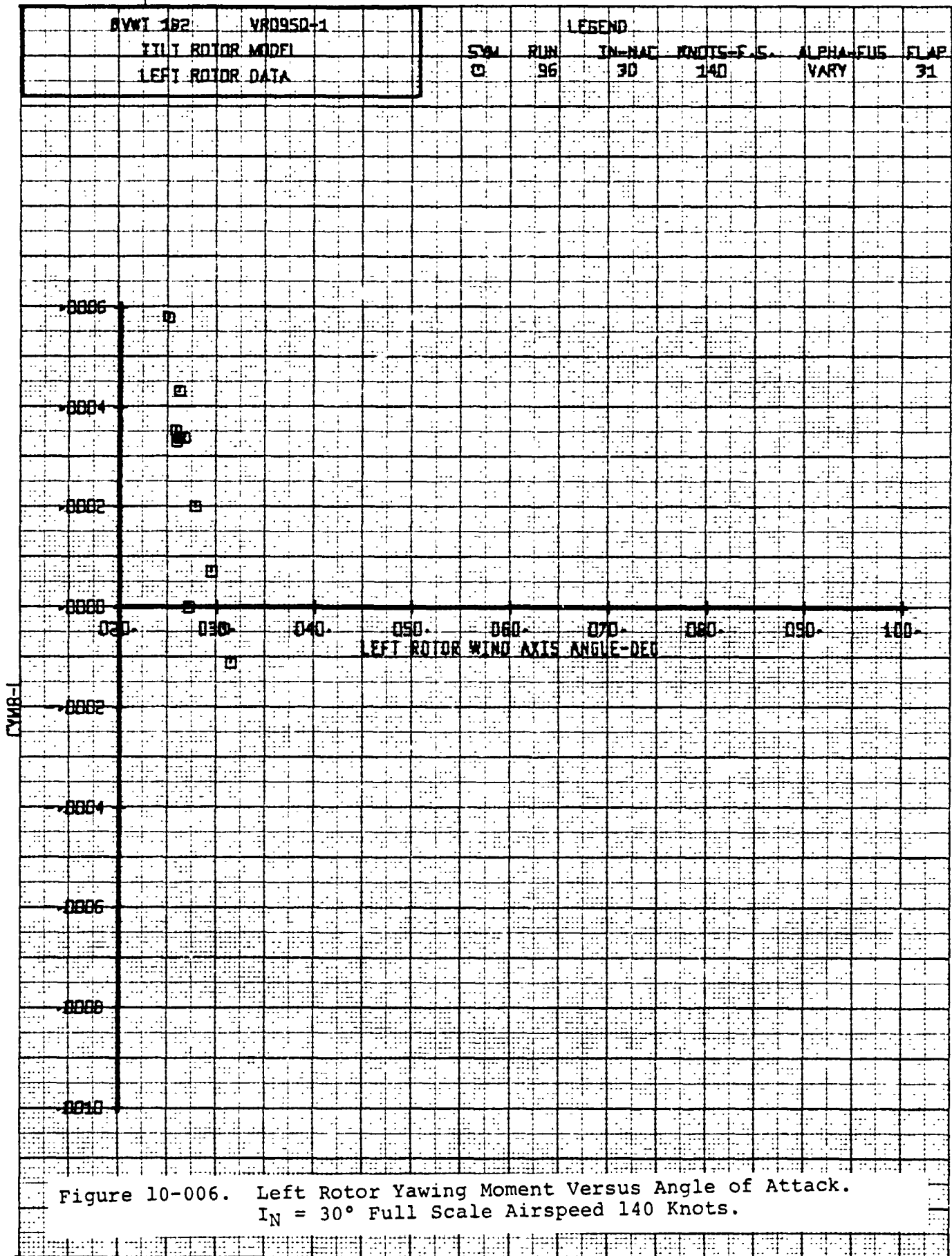


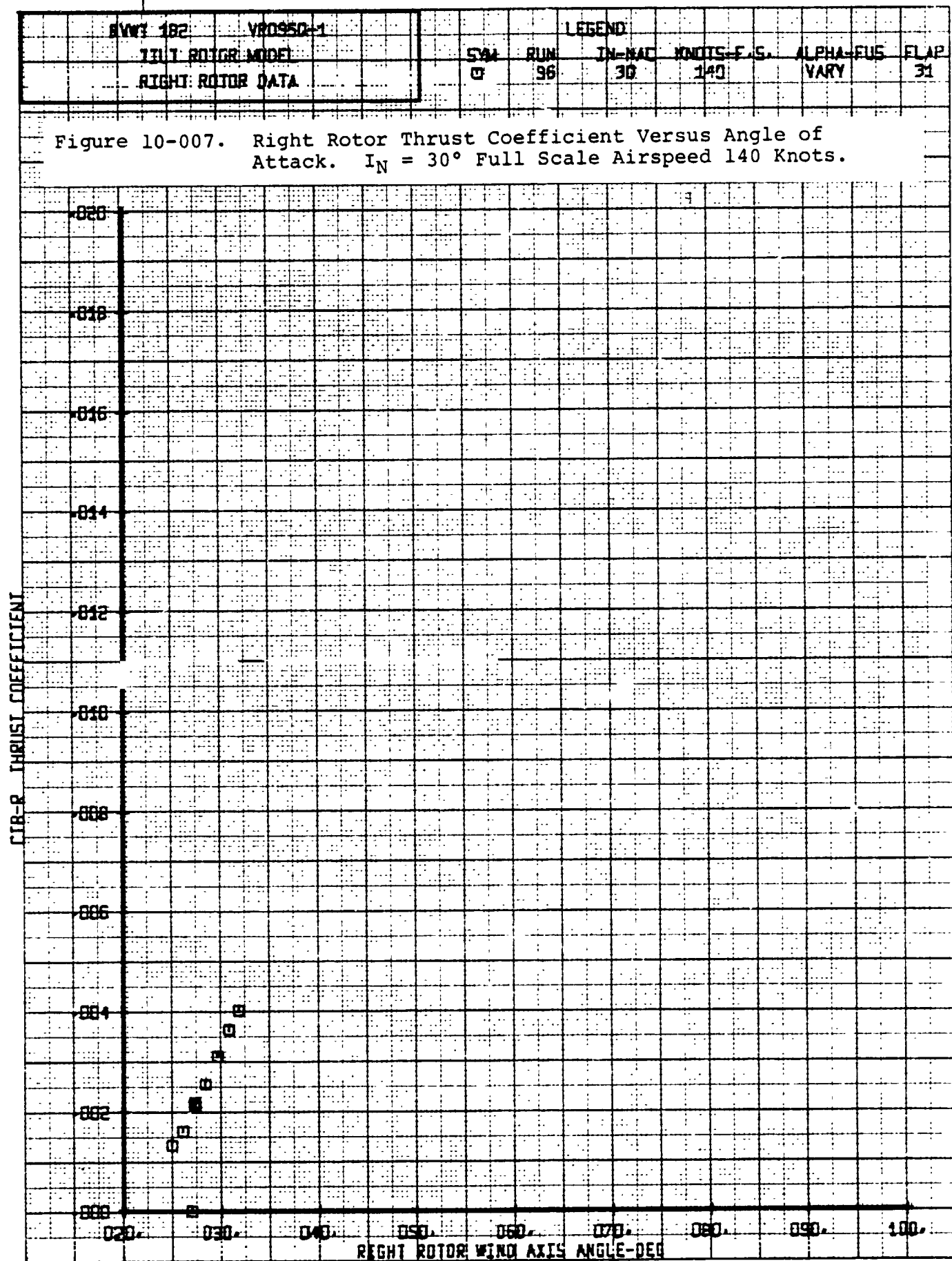
Figure 10-002. Left Rotor Power Coefficient Versus Angle of Attack. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.











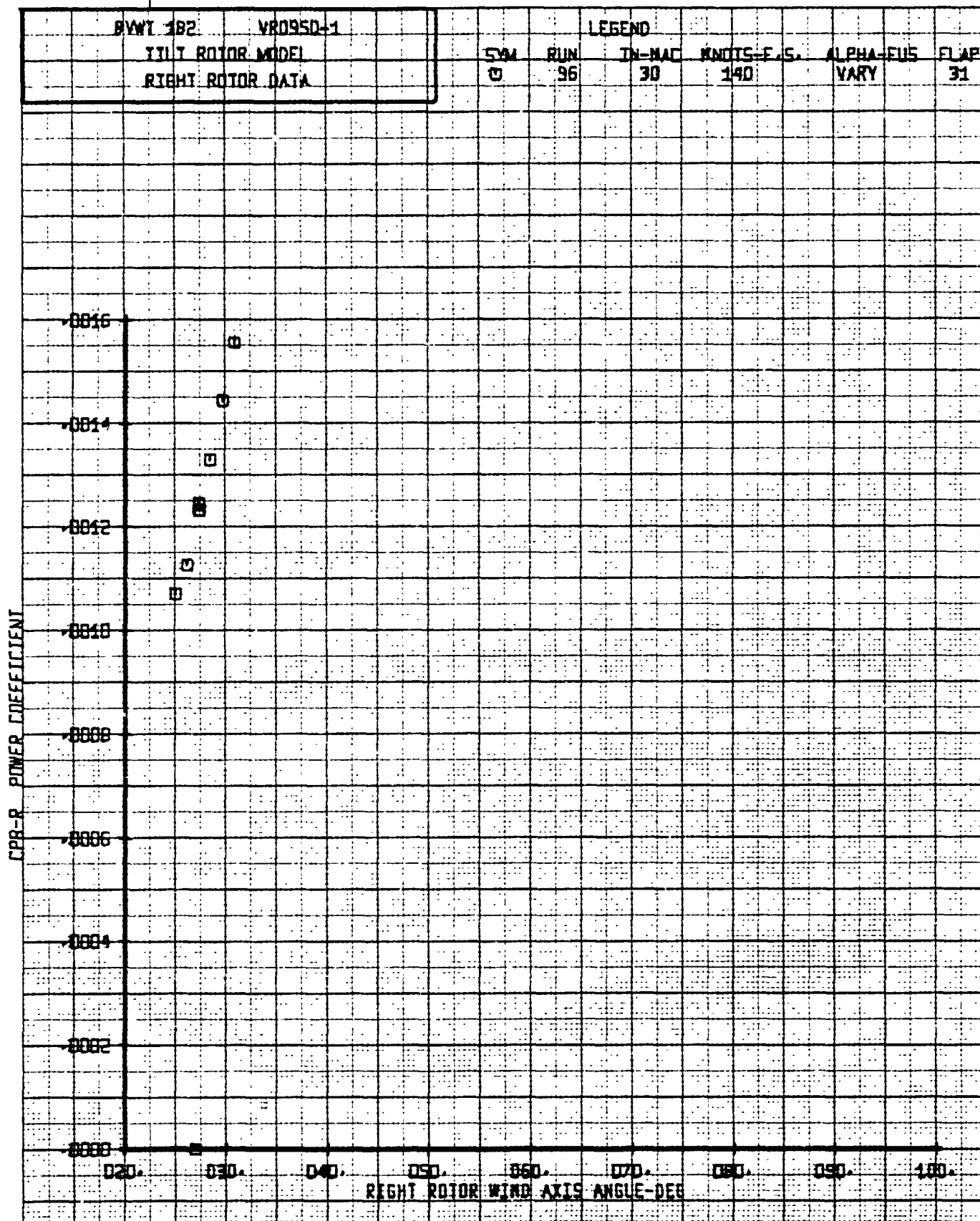
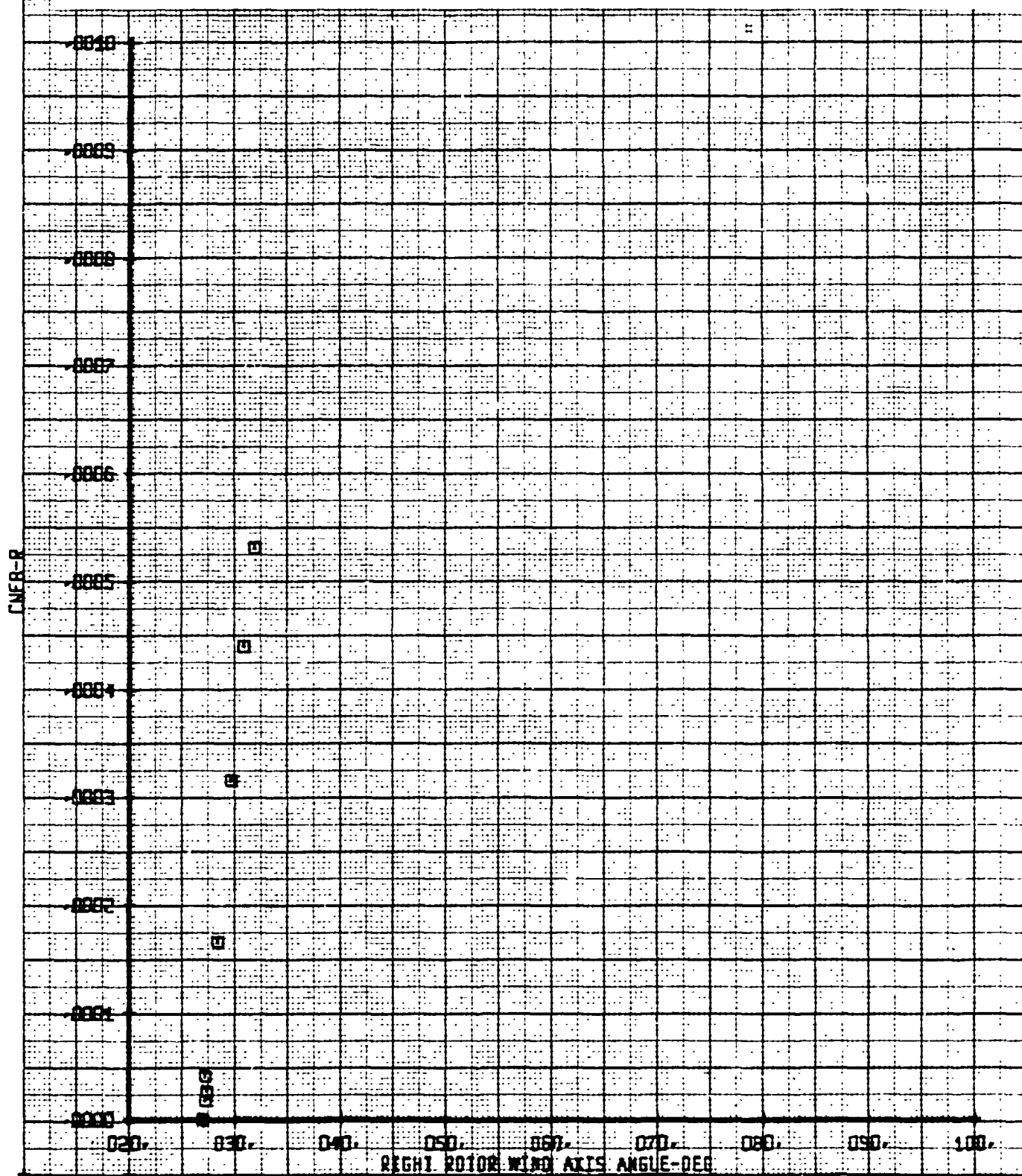
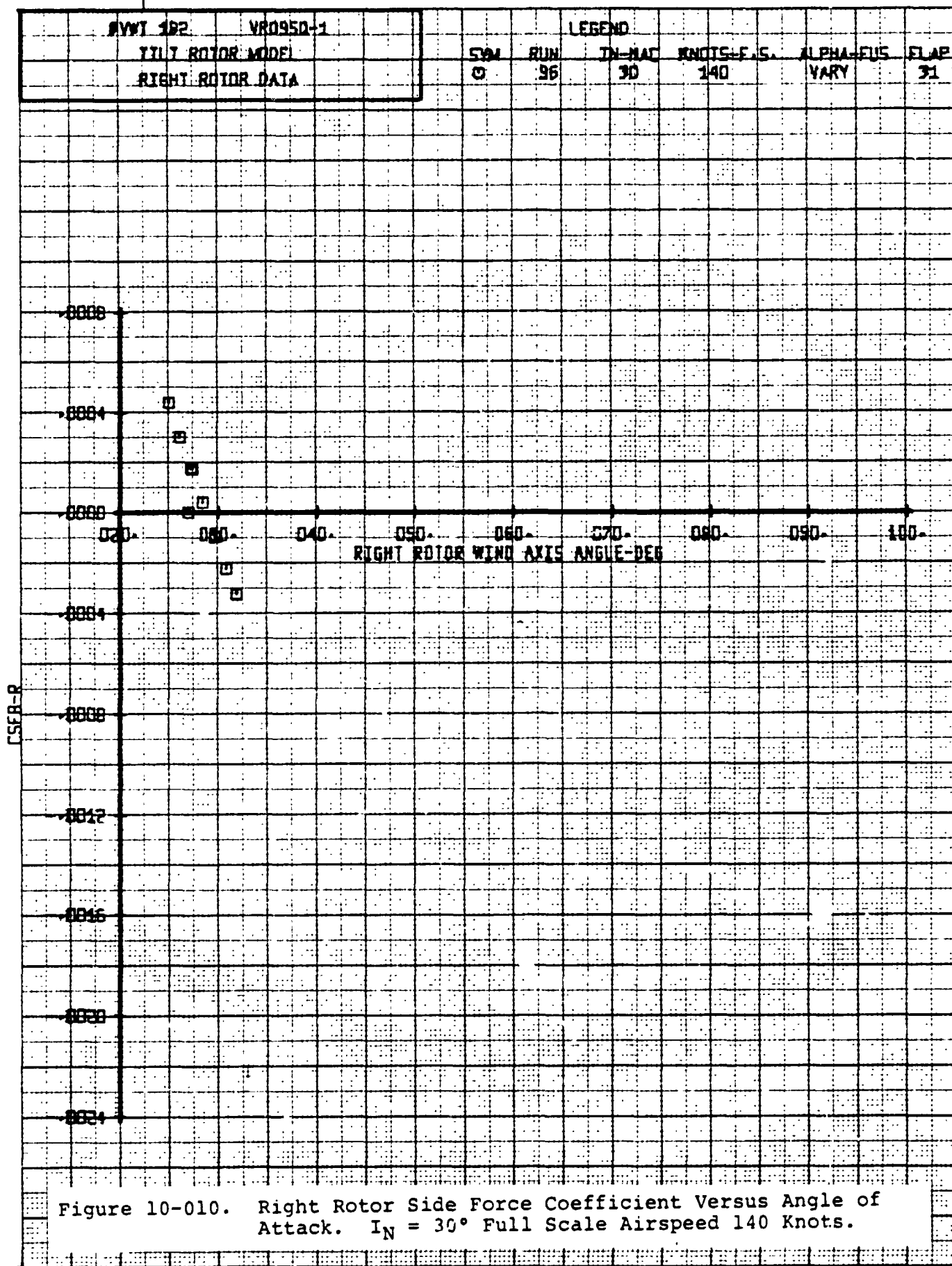


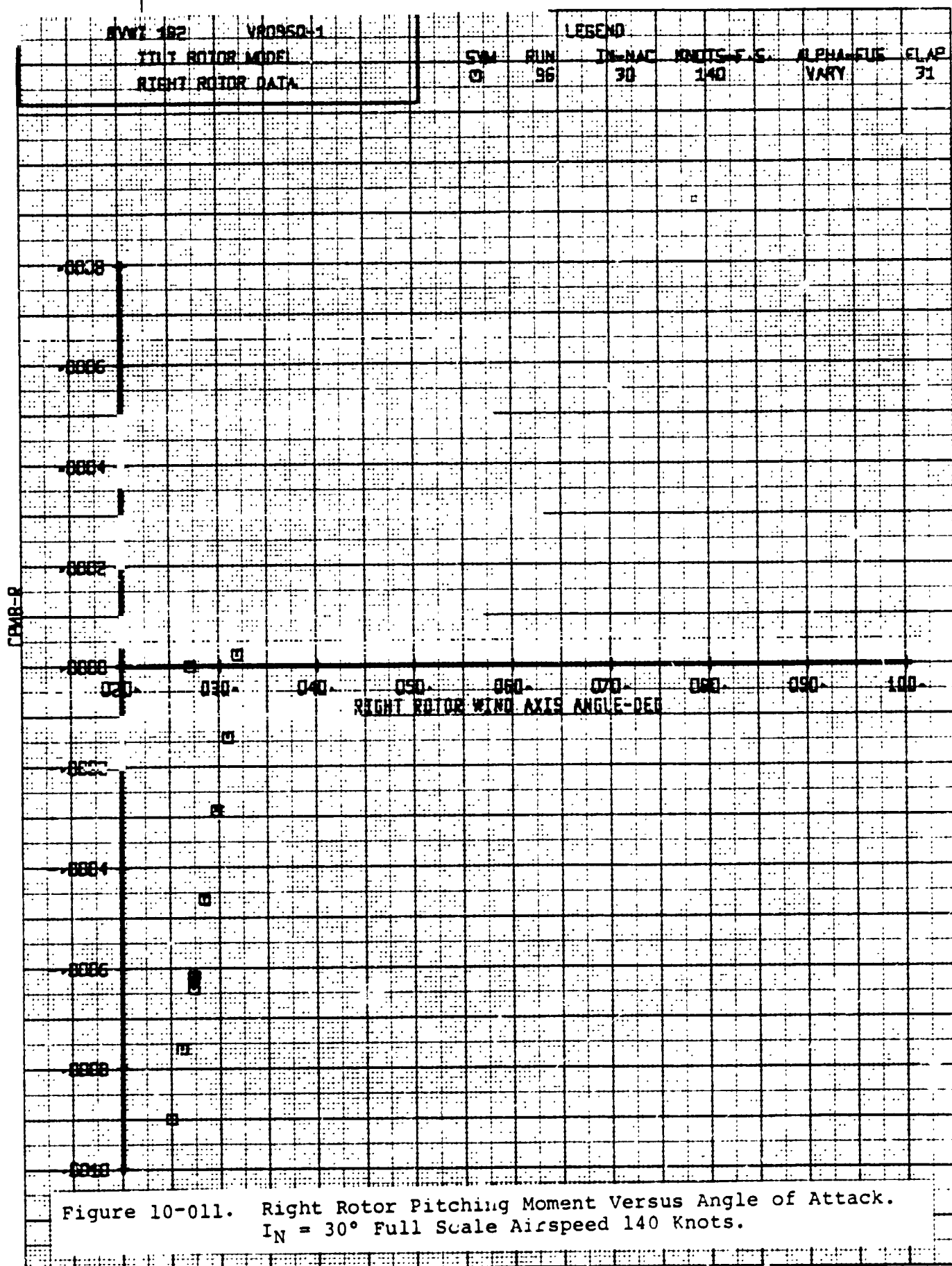
Figure 10-008. Right Rotor Power Coefficient Versus Angle of Attack. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.

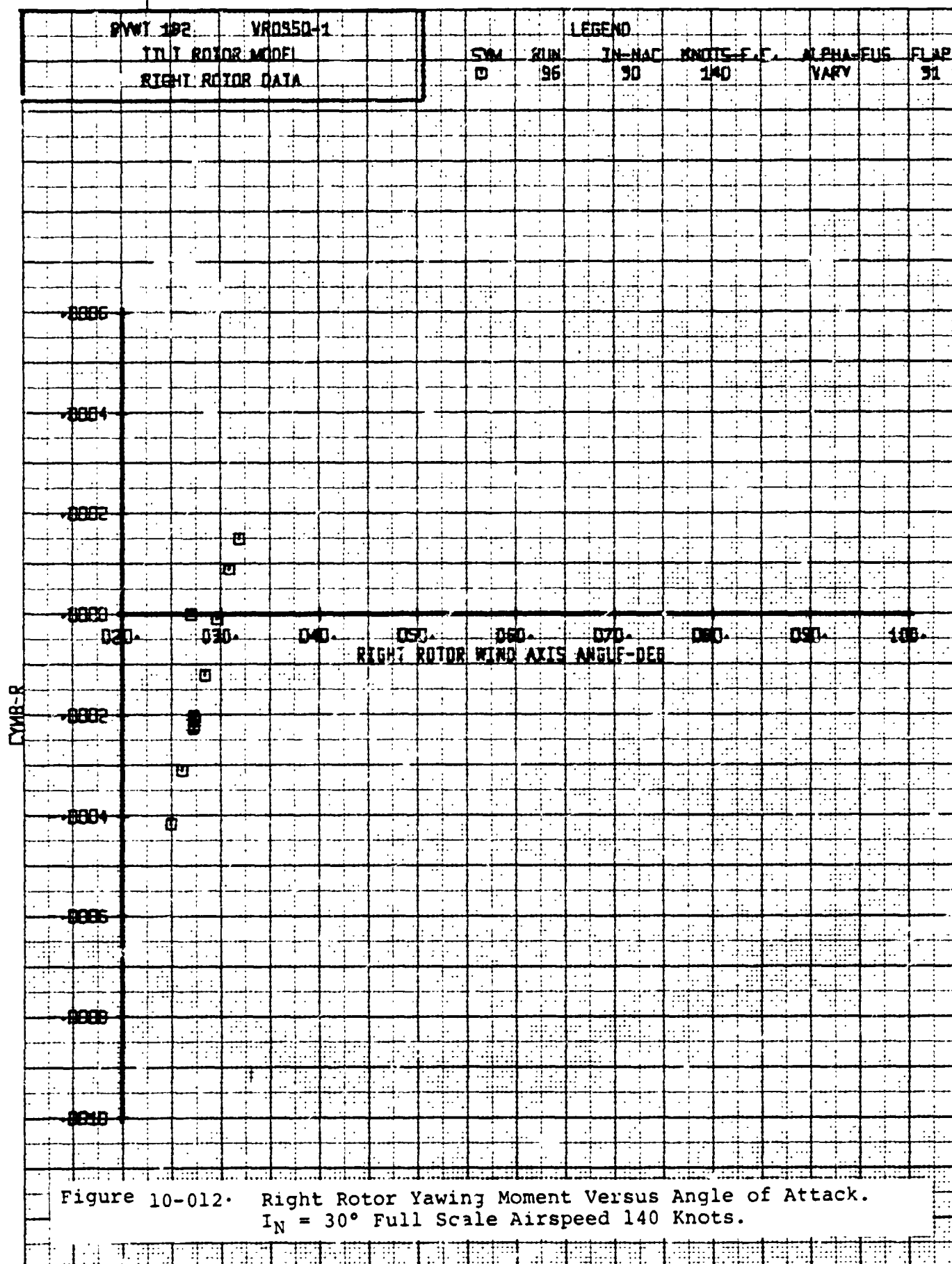
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|-------------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | VR0350-1 | LEGEND | | | | |
| YLLT ROTOR MODEL: | | SWA | RUN | IN-MAC | KNOTS-F.S. | ALPHA-FUS |
| RIGHT ROTOR DATA | | 0 | 96 | 30 | 140 | VARY |
| | | | | | | FLAP 31 |

Figure 10-009. Right Rotor Normal Force Coefficient Versus Angle of Attack. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.



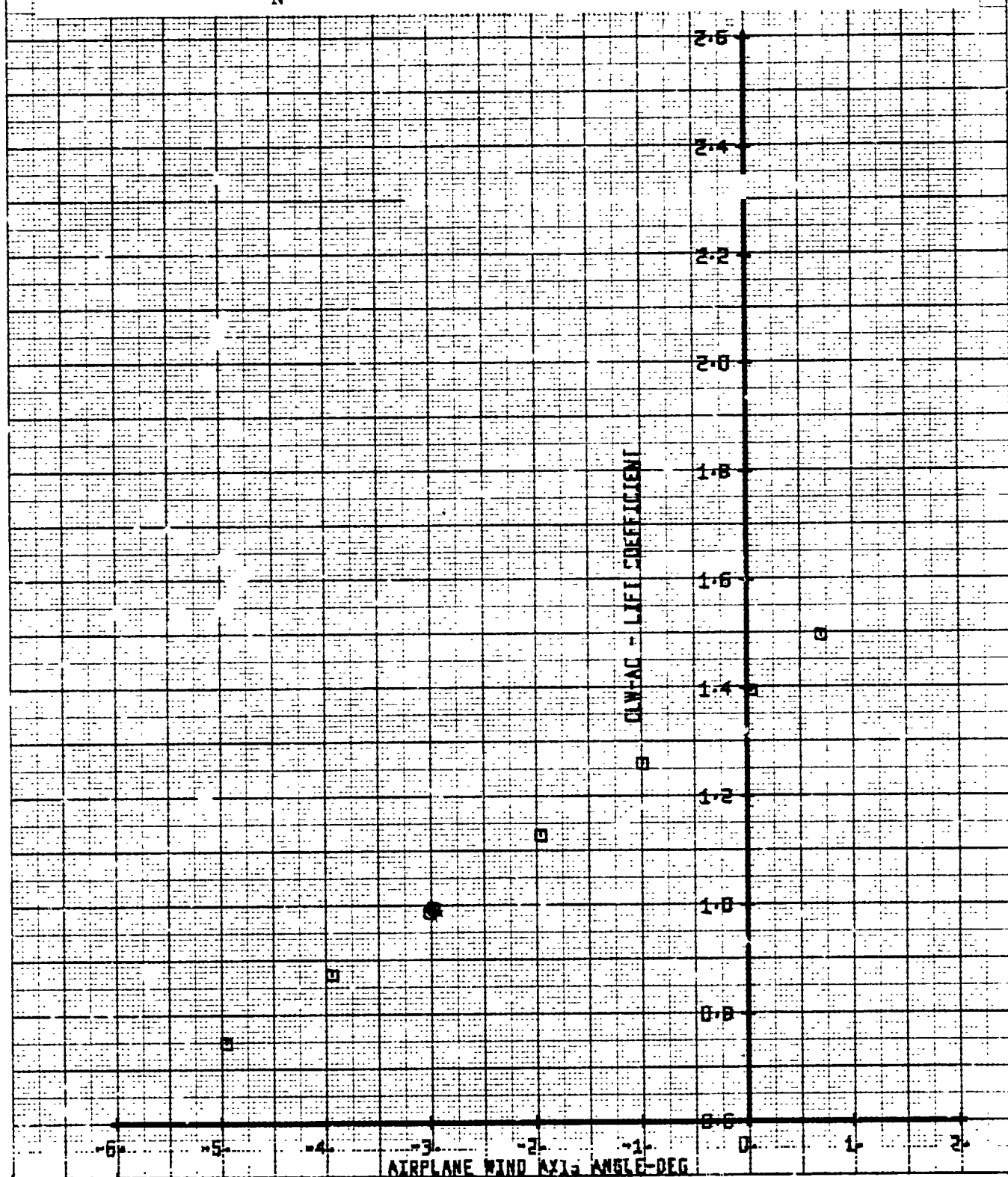


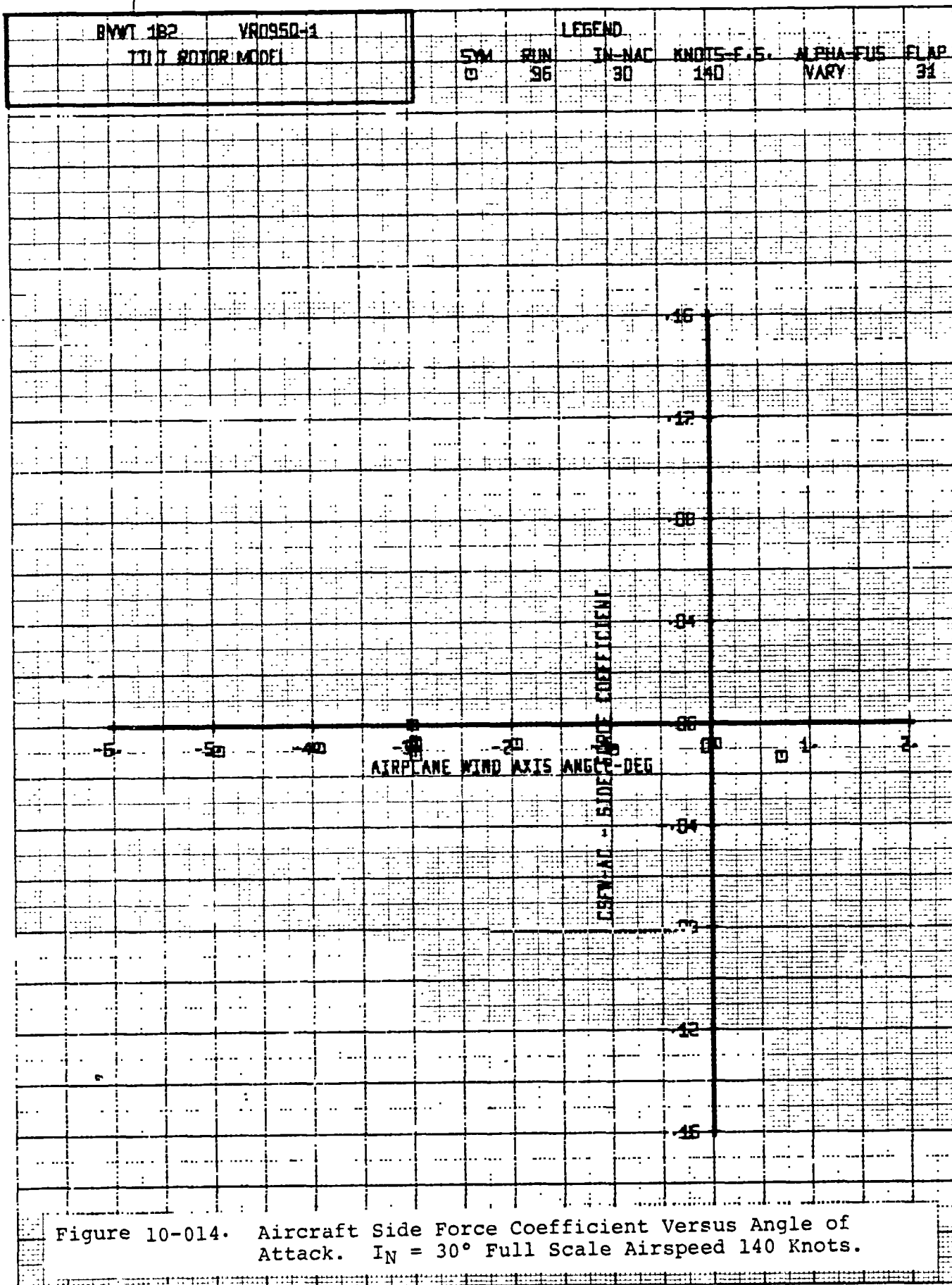


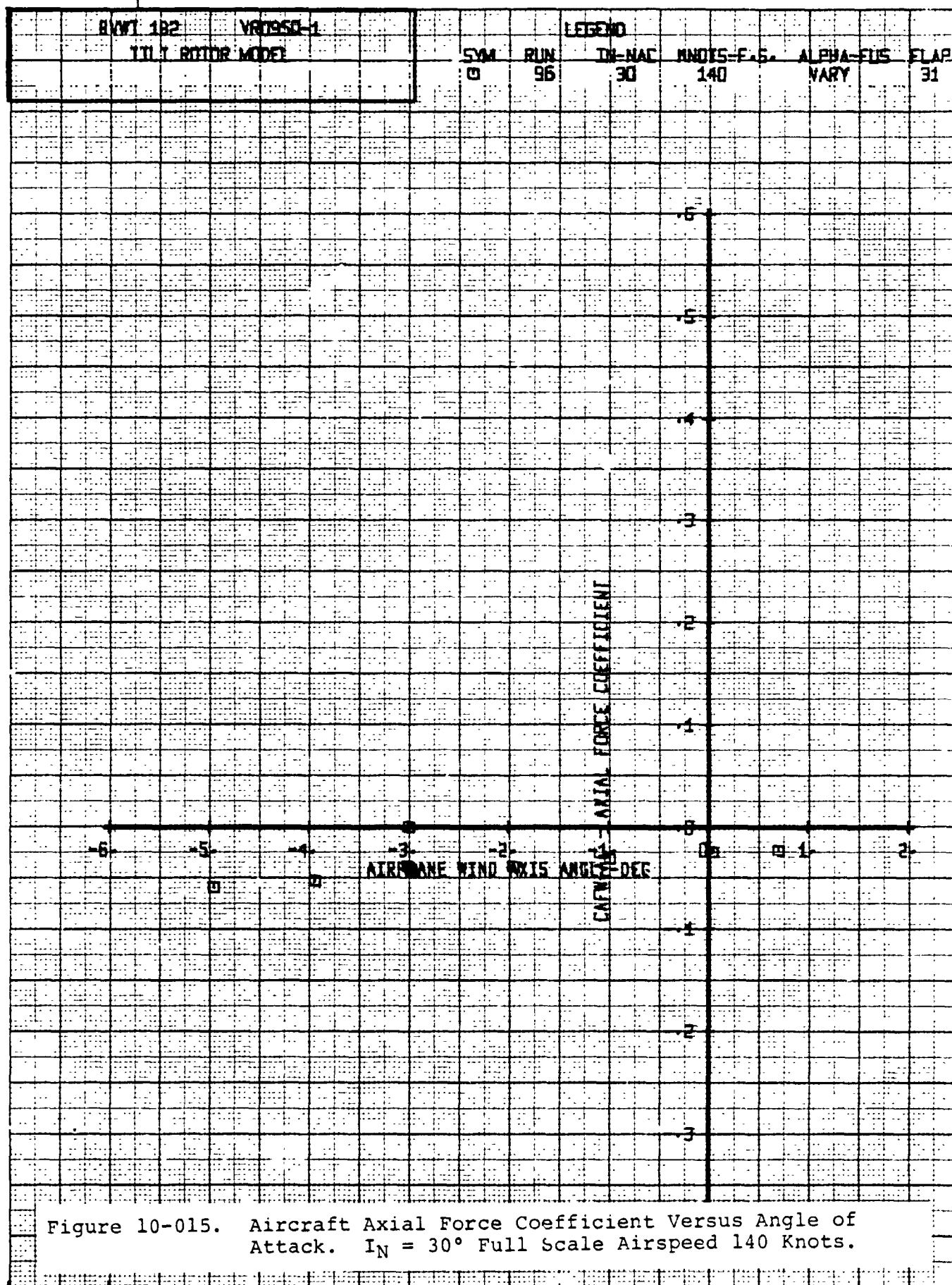


| | | | | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|------|--|--|
| BVWT 182 | V80950-1 | LEGEND | | | | | | | |
| TILT ROTOR MODEL | | SWAY | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FUS | FLAP | | |
| | | 0 | 36 | 30 | 140 | VARY | 31 | | |

Figure 10-013. Aircraft Lift Coefficient Versus Angle of Attack.
 $I_N = 30'$ Full Scale Airspeed 140 Knots.







BVWT 182 VR0950-1

TILT ROTOR MODEL

LEGEND

| SYM | RUN | IN-NAC | KNOTS-F.F. | ALPHA-DEG | FLAP |
|-----|-----|--------|------------|-----------|------|
| □ | 96 | 30 | 140 | VARY | 91 |

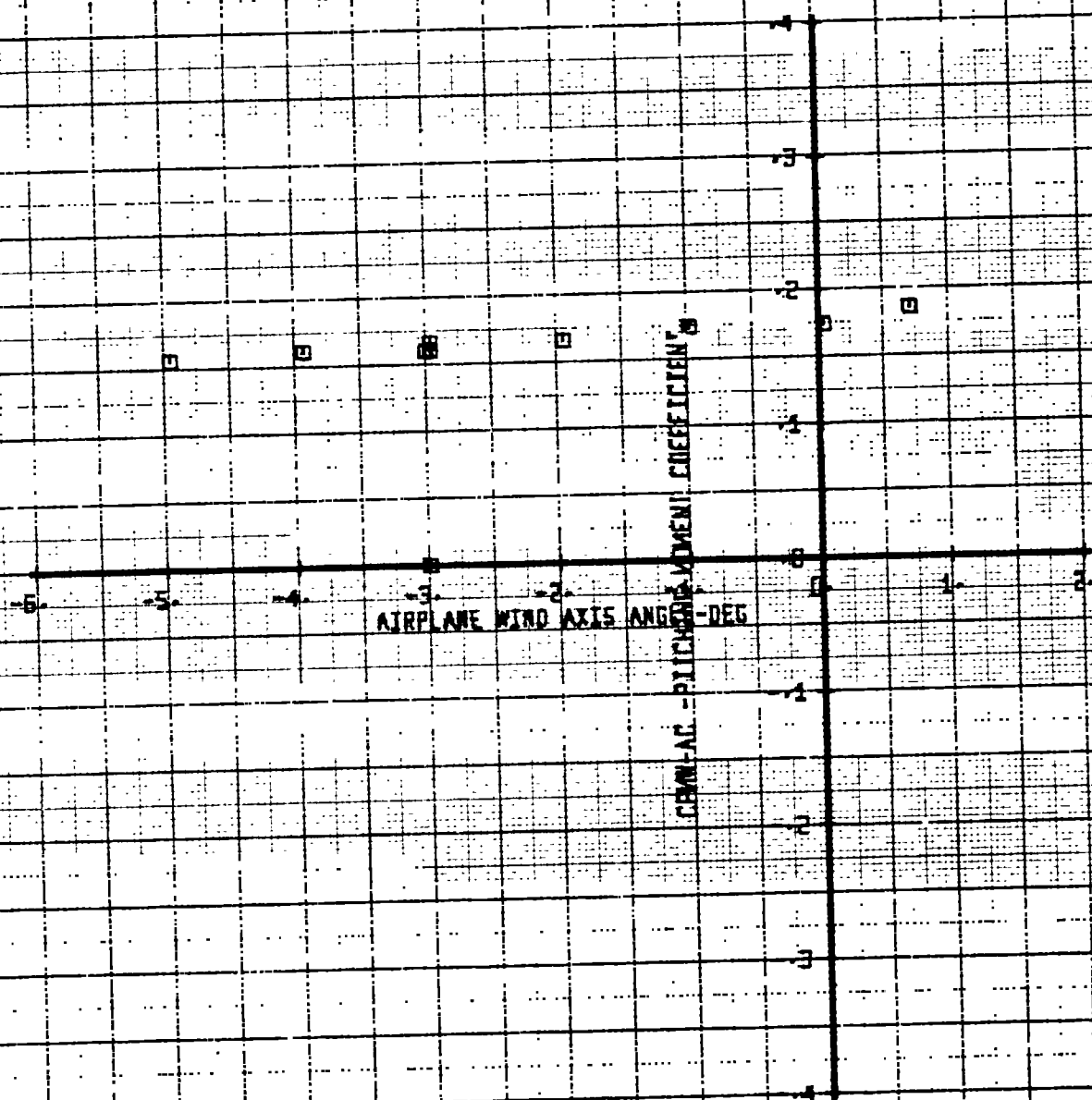


Figure 10-016. Aircraft Pitching Moment Versus Angle of Attack.
 $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.

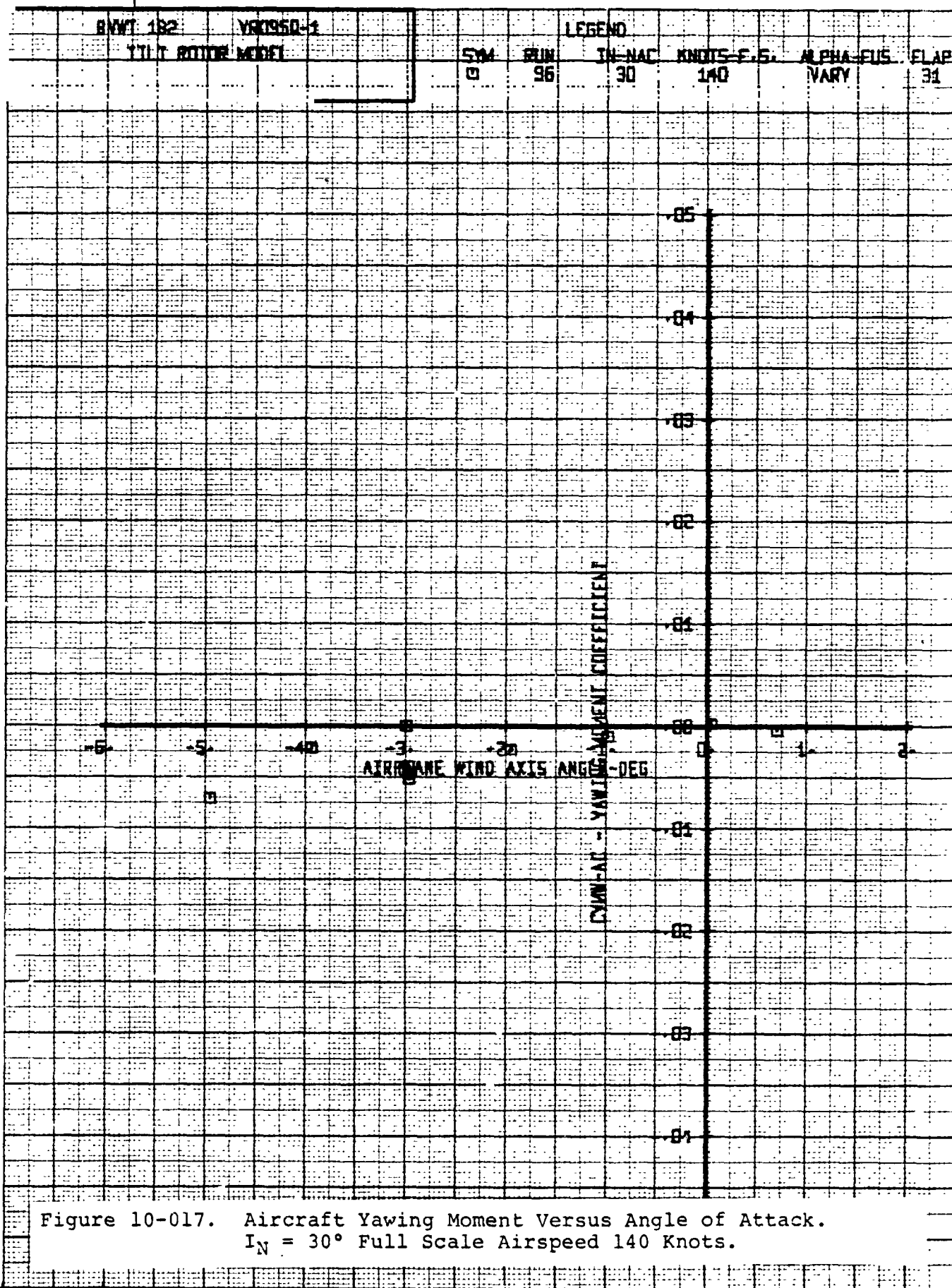
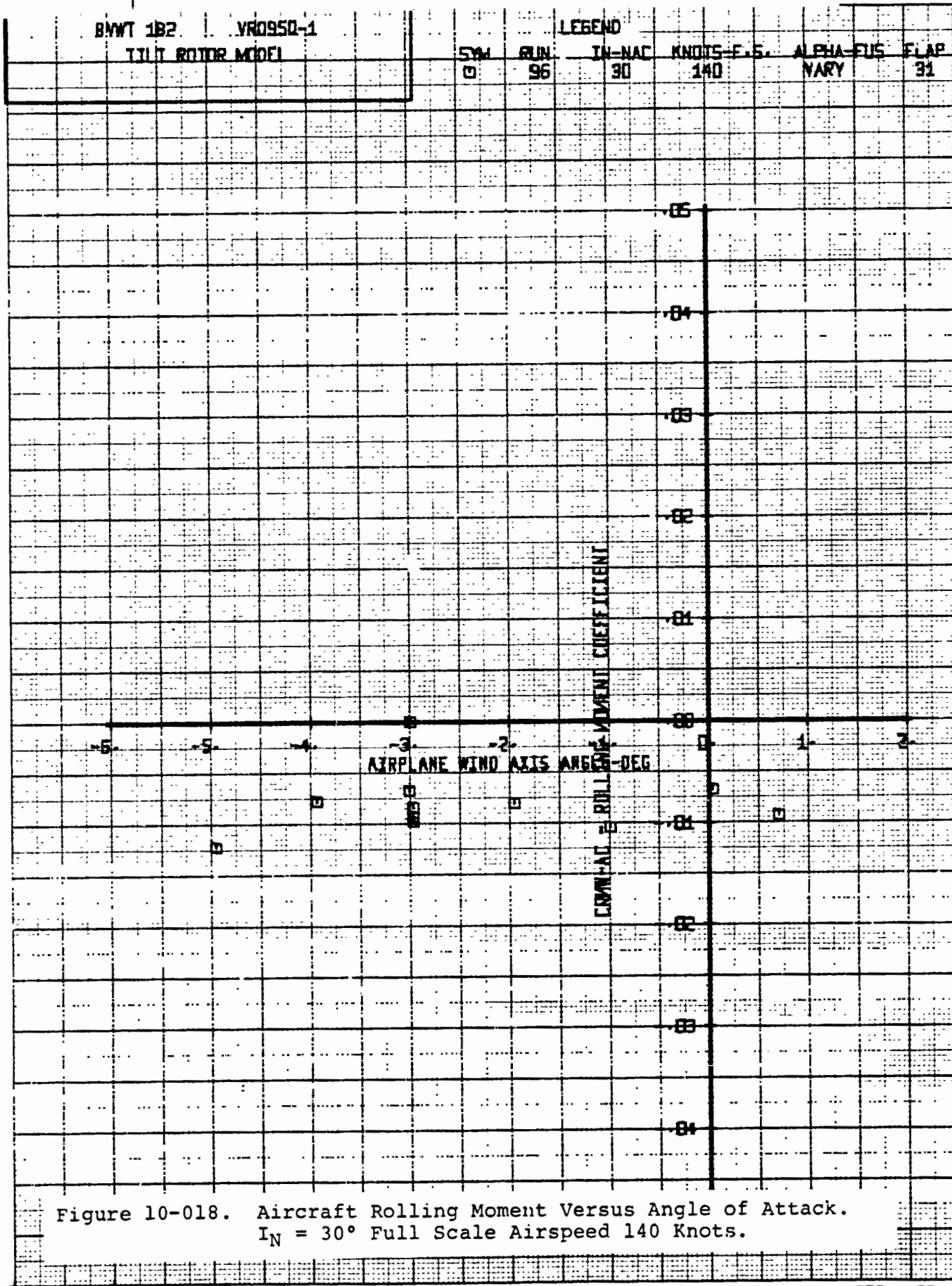
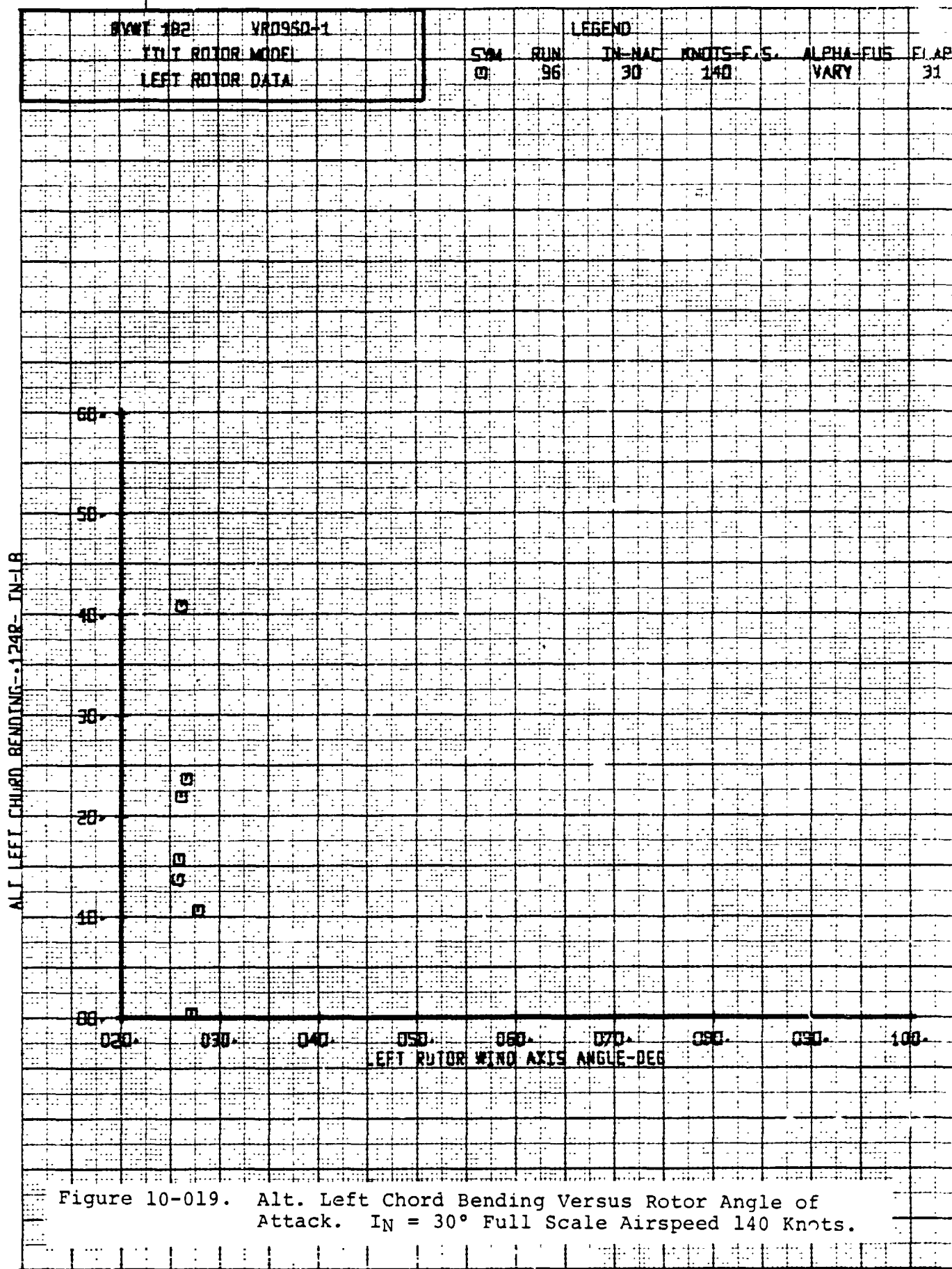
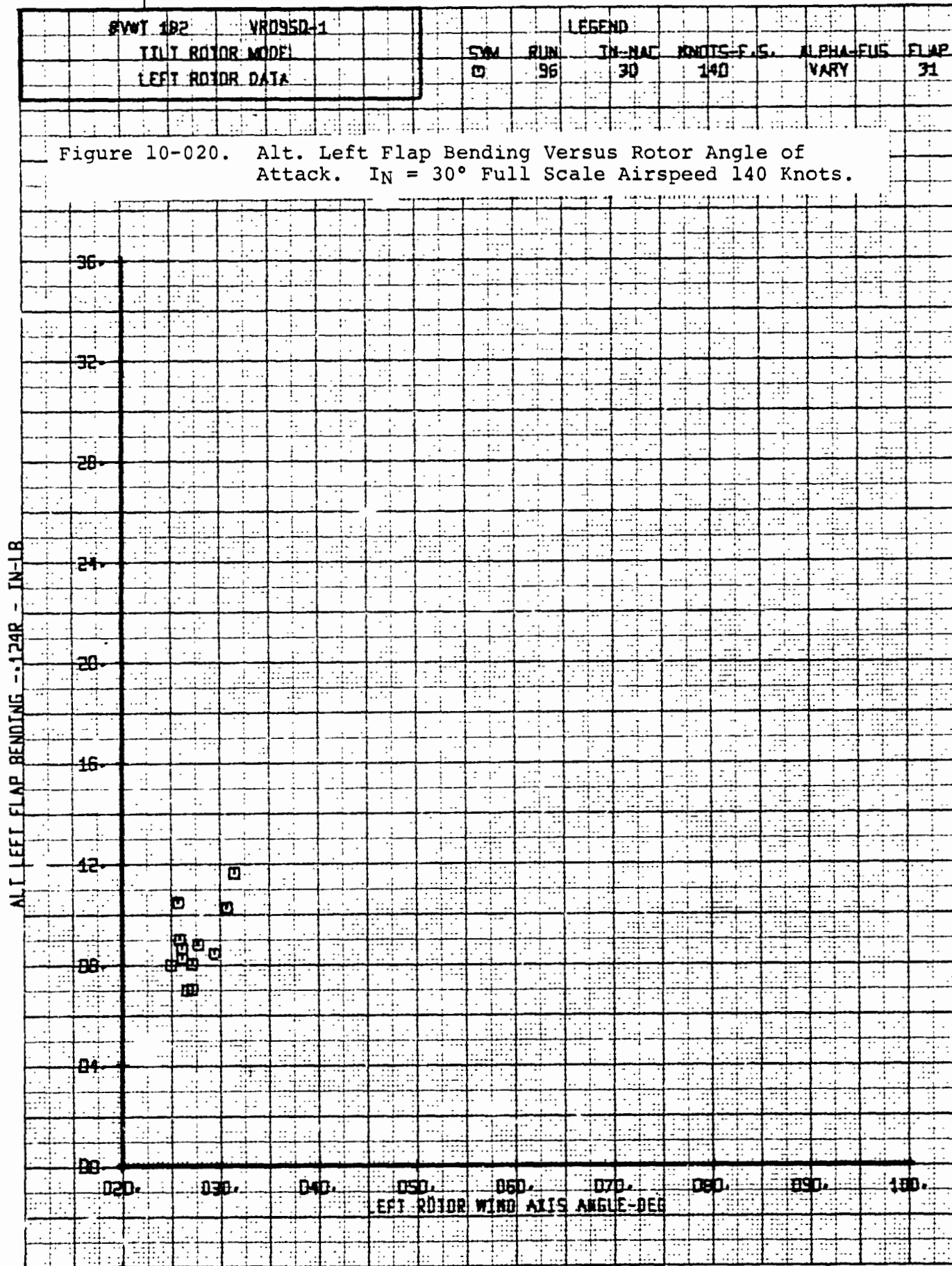


Figure 10-017. Aircraft Yawing Moment Versus Angle of Attack.
 $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.

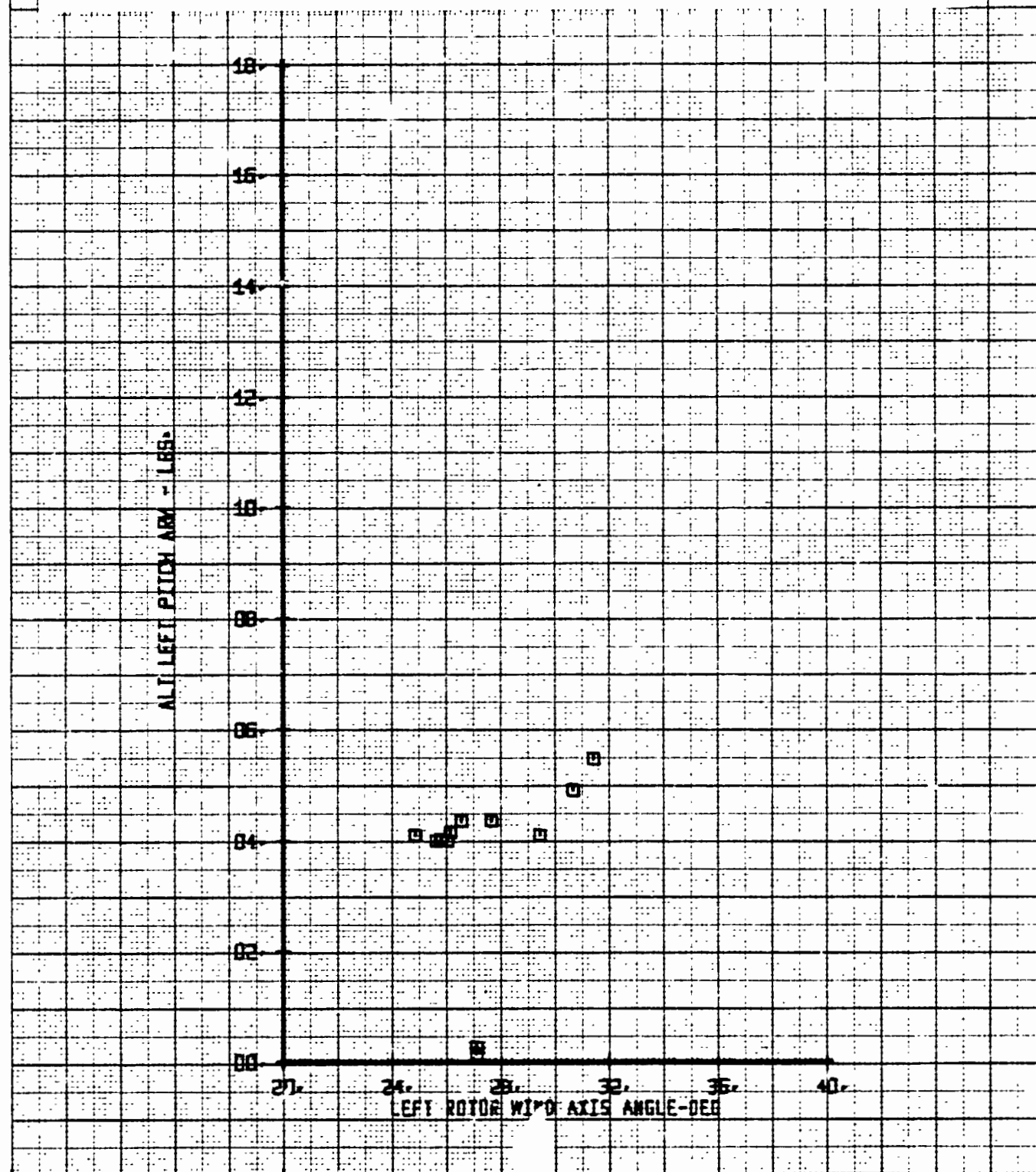


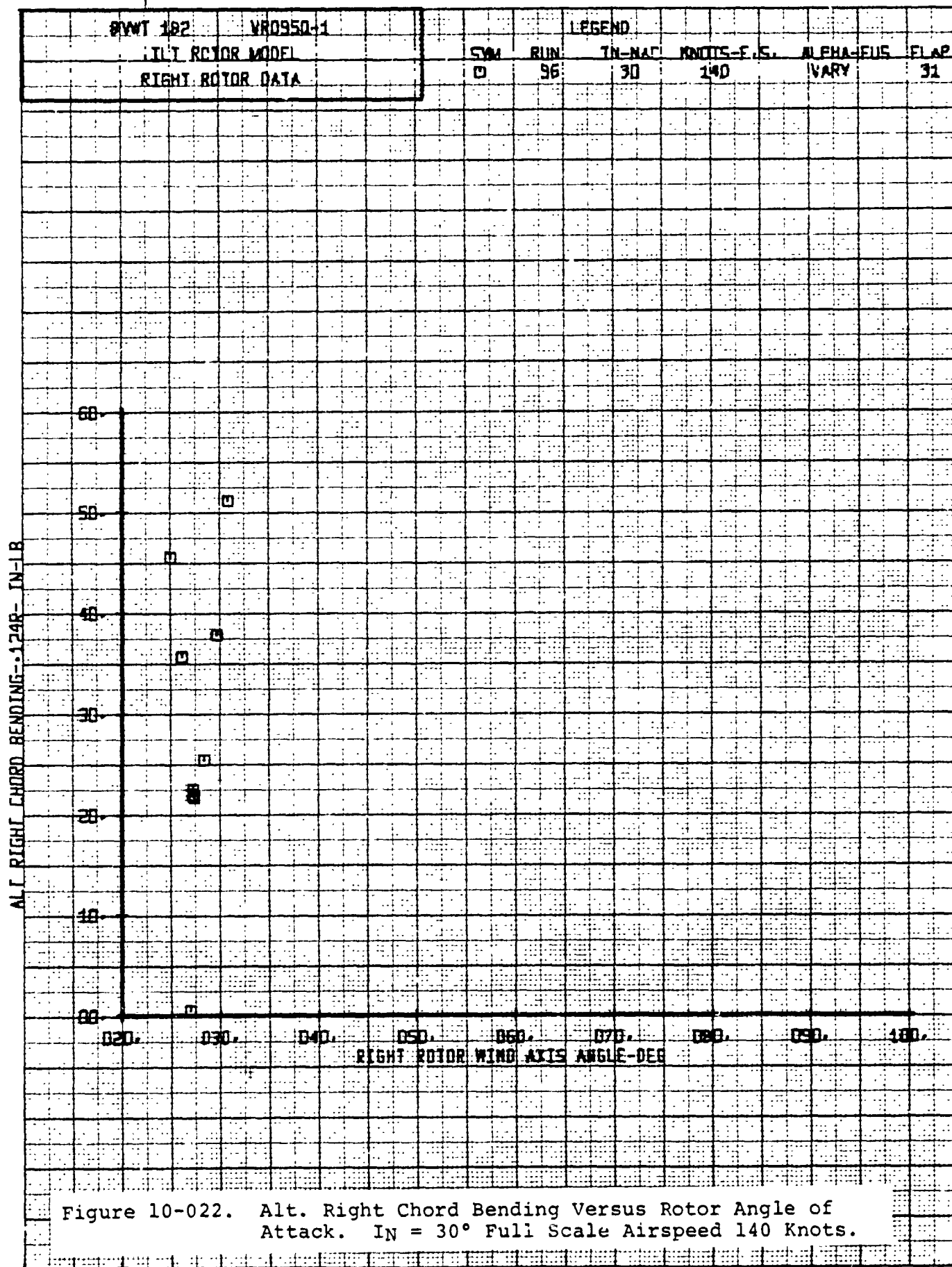


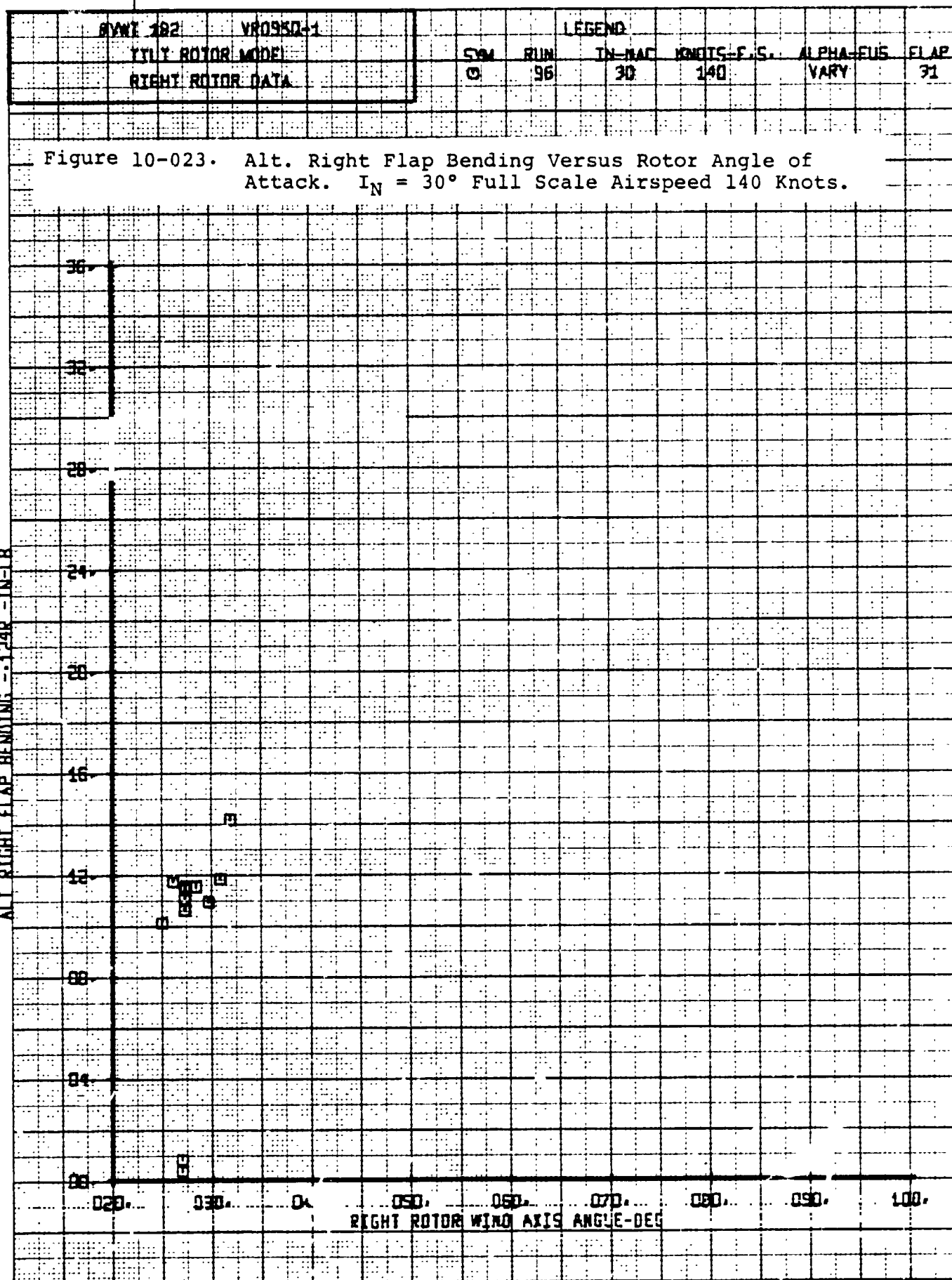


| | | | | | | | |
|-----------------|----------|--------|-----|--------|------------|-----------|------|
| BWWT 102 | YR0950-1 | LEGEND | | | | | |
| TILT ROTOR MODE | | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FUS | FLAP |
| LEFT ROTOR DATA | | 0 | 96 | 30 | 140 | VARY | 31 |

Figure 10-021. Alt. Left Pitch Link Load Versus Rotor Angle of Attack. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.

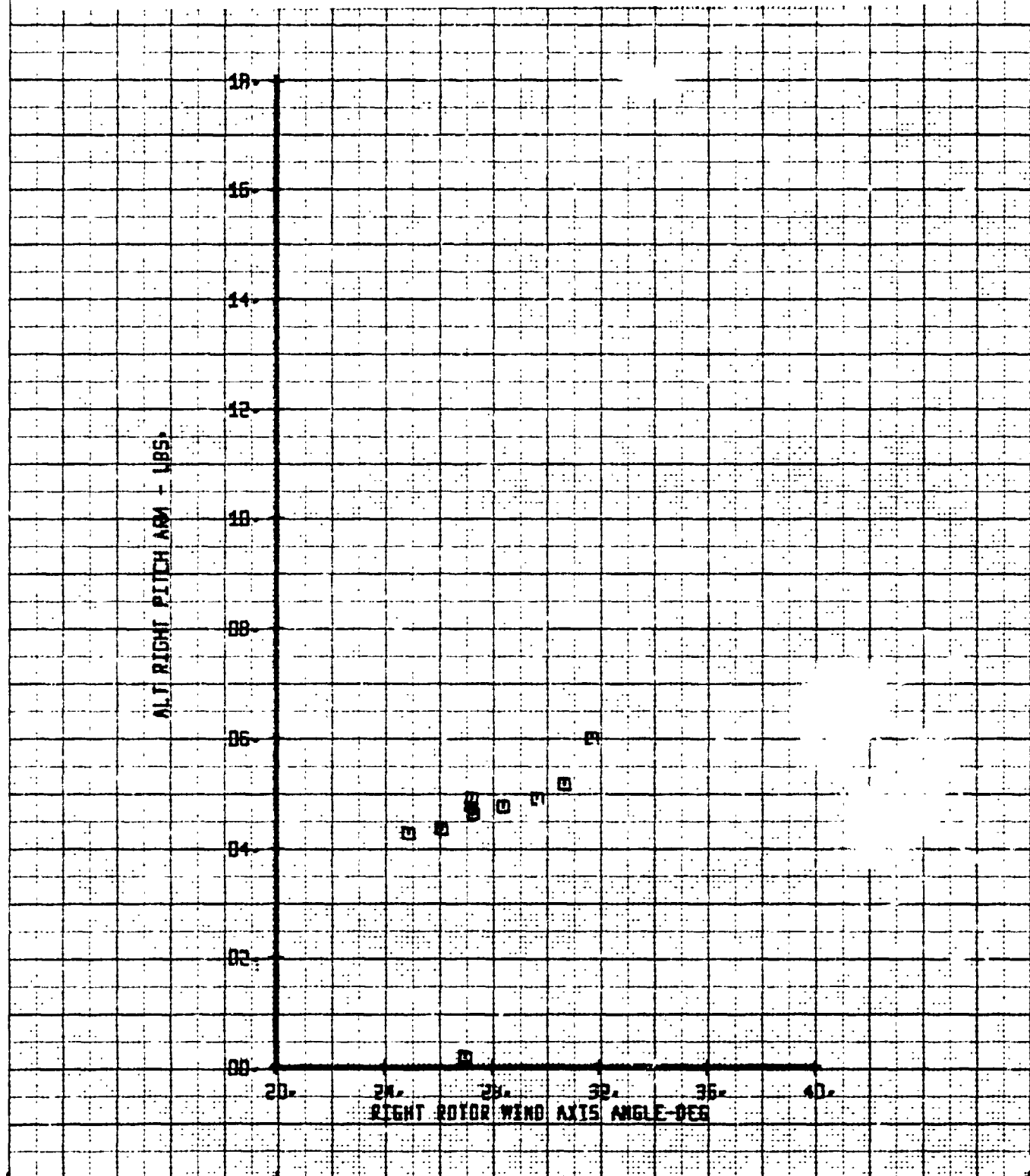






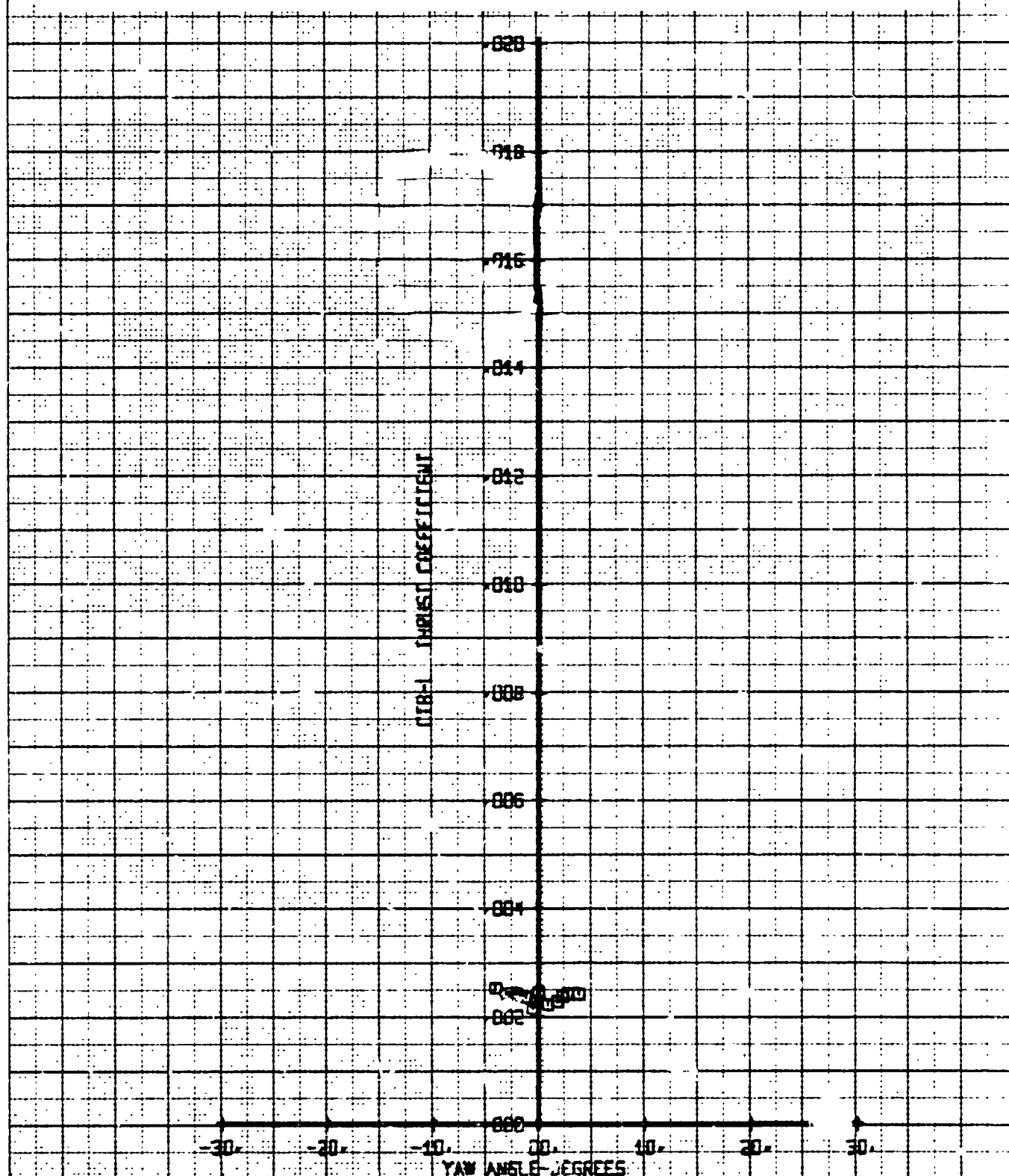
| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BYWT 182 | YR0950-1 | LEGEND | | | | |
| TILT ROTOR MODEL | | SYM | RUN | IN-MAC | KNOTS-F.S. | ALPHA-FUS |
| RIGHT ROTOR DATA | | 0 | 96 | 30 | 140 | VARY |
| | | FLAP | | | | |
| | | 31 | | | | |

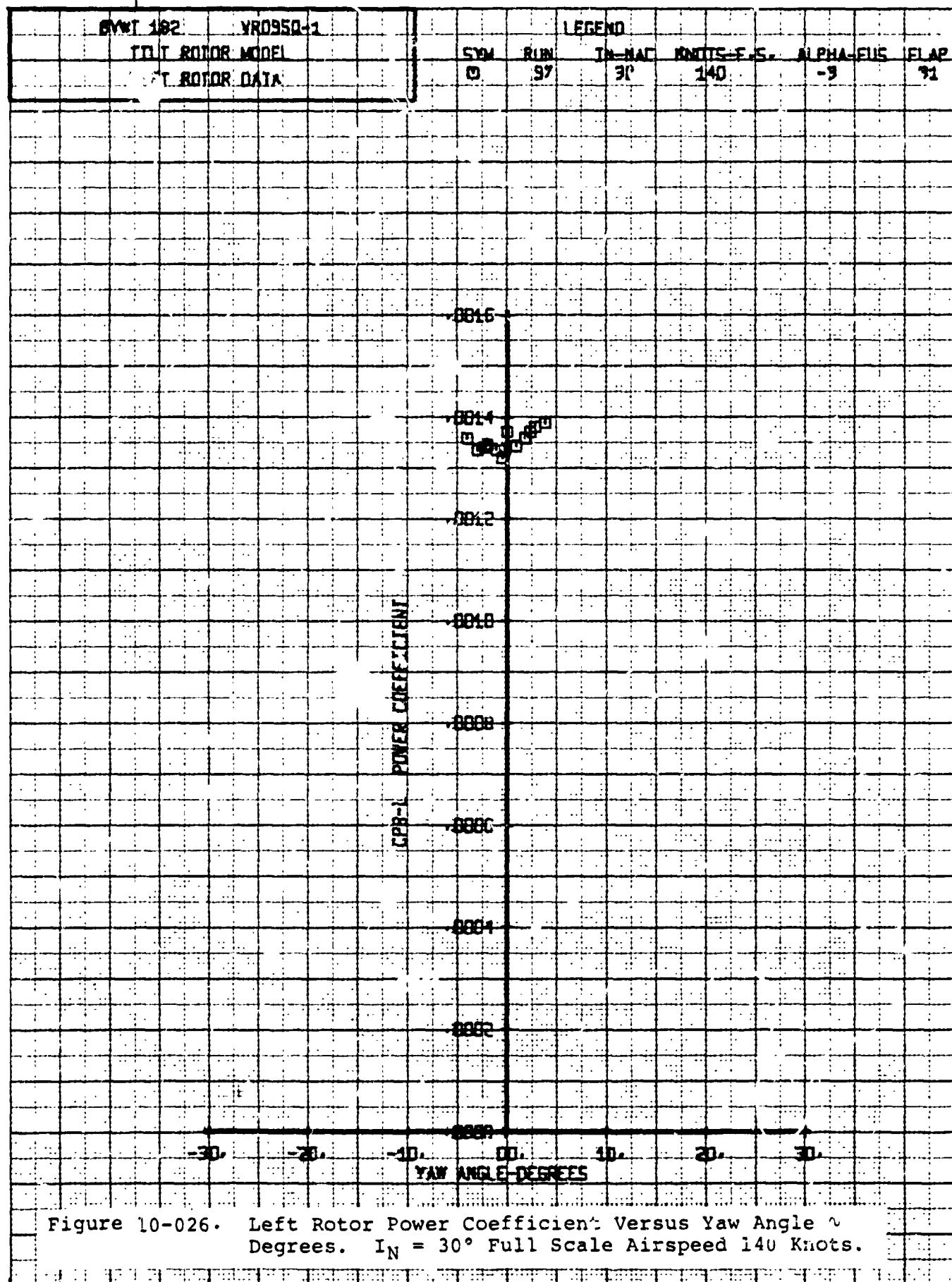
Figure 10-024. Alt. Right Pitch Link Load Versus Rotor Angle of Attack. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.

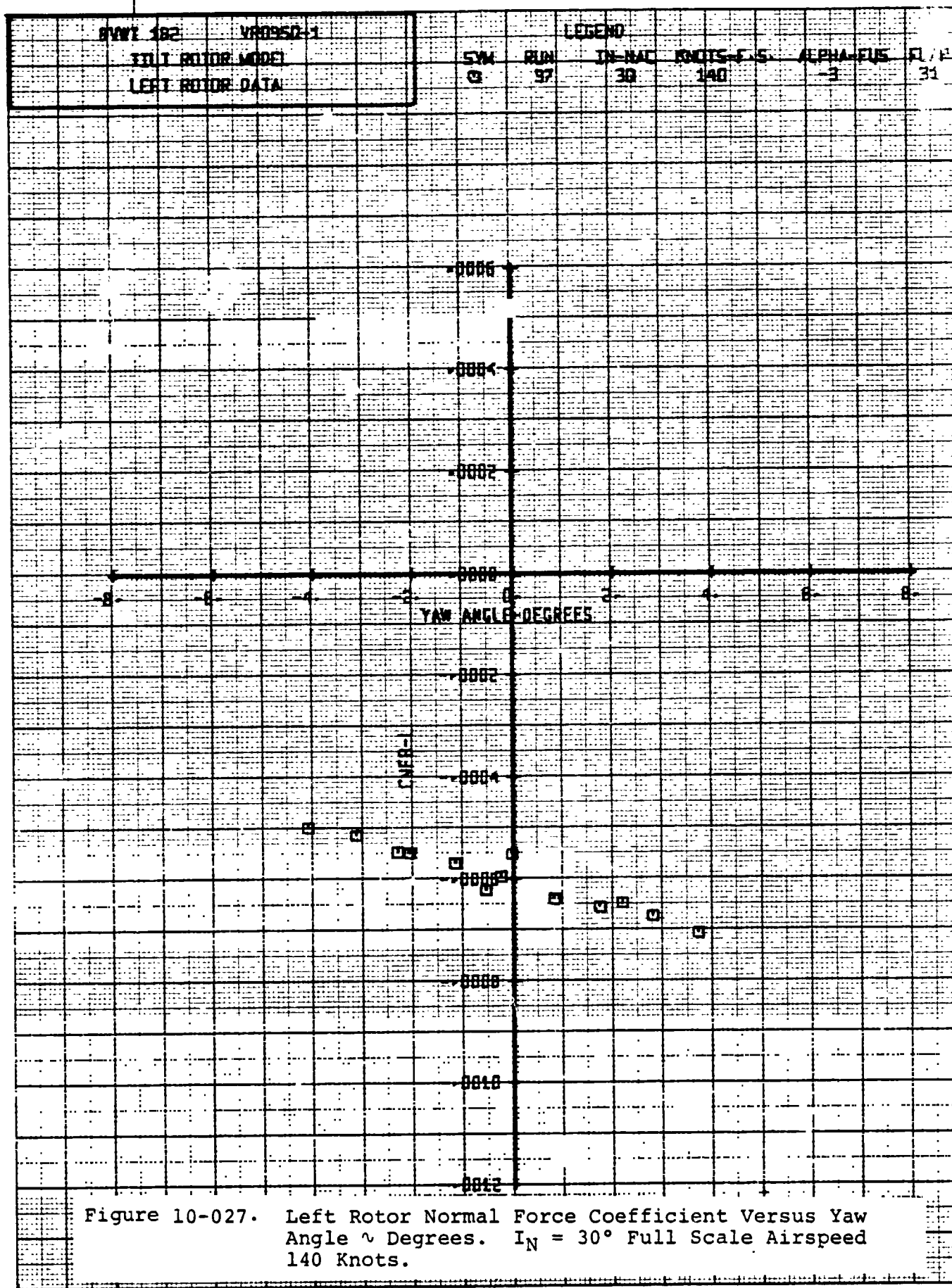


| | | | | | | | |
|------------------|---------|--------|-----|--------|------------|-----------|------|
| BVWT 182 | VR050-1 | LEGEND | | | | | |
| LEFT ROTOR MODEL | | SYM | RUN | IN-NAE | KNOTS-F.S. | ALPHA-FUS | FLAP |
| LEFT ROTOR DATA | | Q | 97 | 30 | 140 | -3 | 31 |

Figure 10-025. Left Rotor Thrust Coefficient Versus Yaw Angle ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.







| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | VR0950-1 | LEGEND | | | | |
| TILT ROTOR MODEL | | SYM | RUN | IN-MAC | KNOTS F.S. | ALPHA-FUS |
| LEFT ROTOR DATA | | □ | 97 | 30 | 140 | -3 |
| | | | | | | 31 |

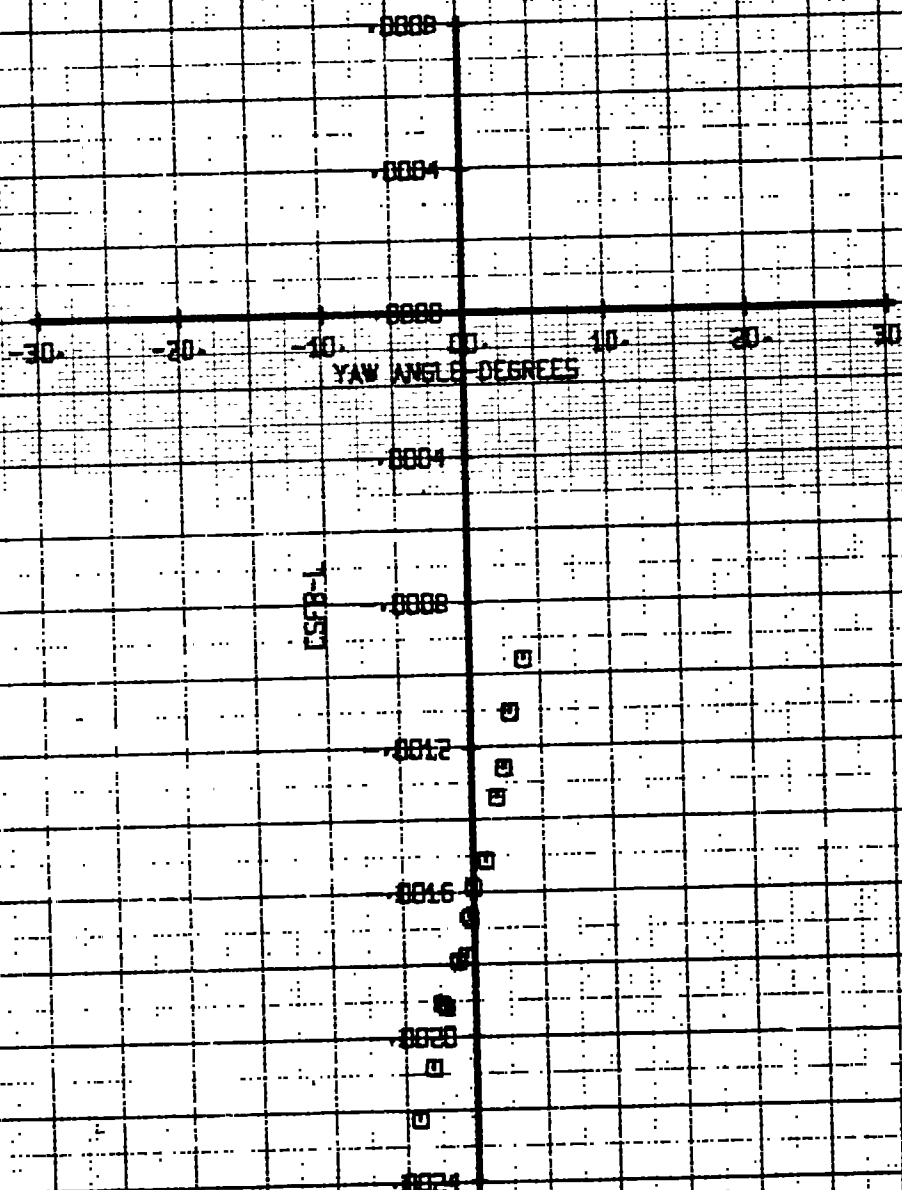
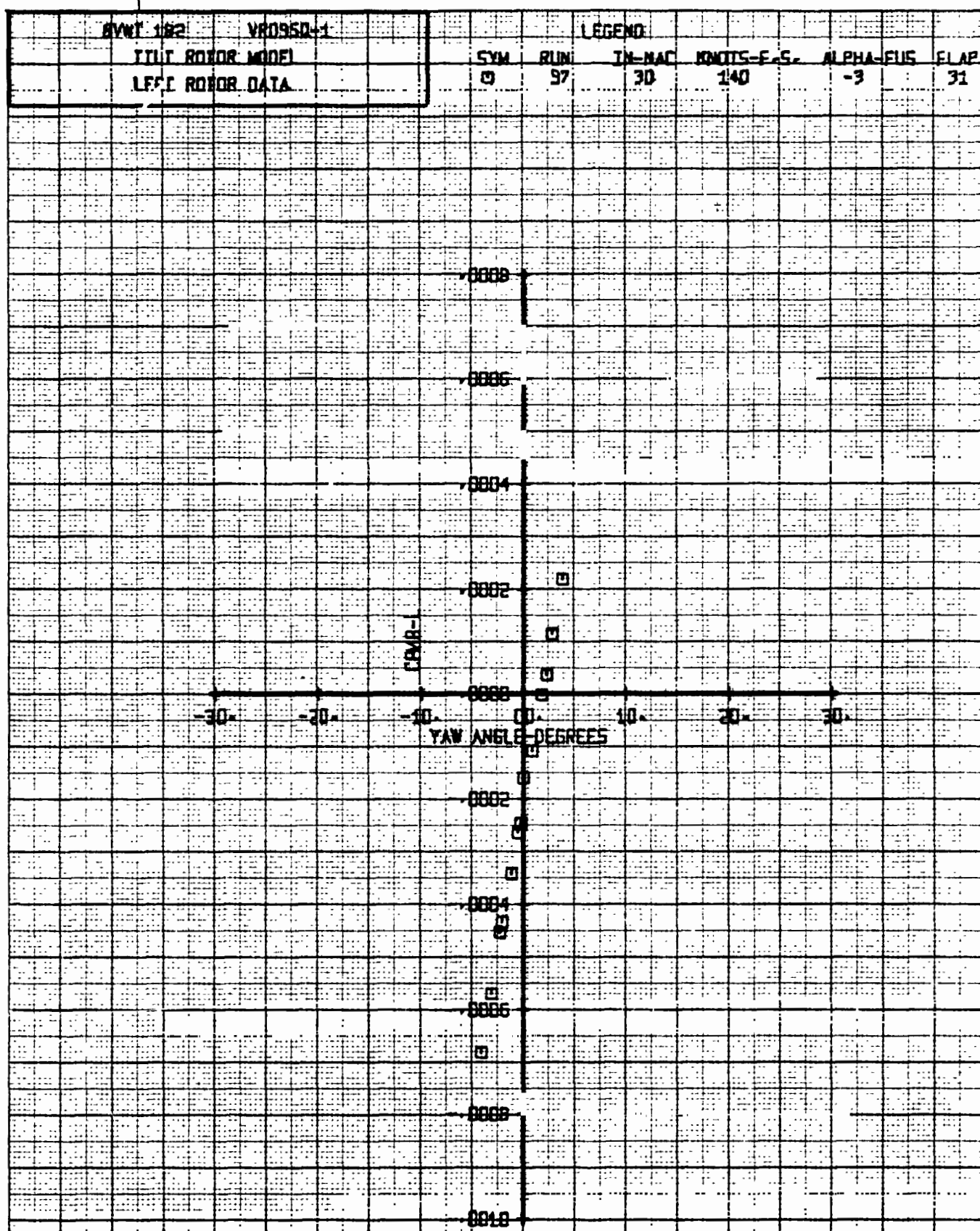
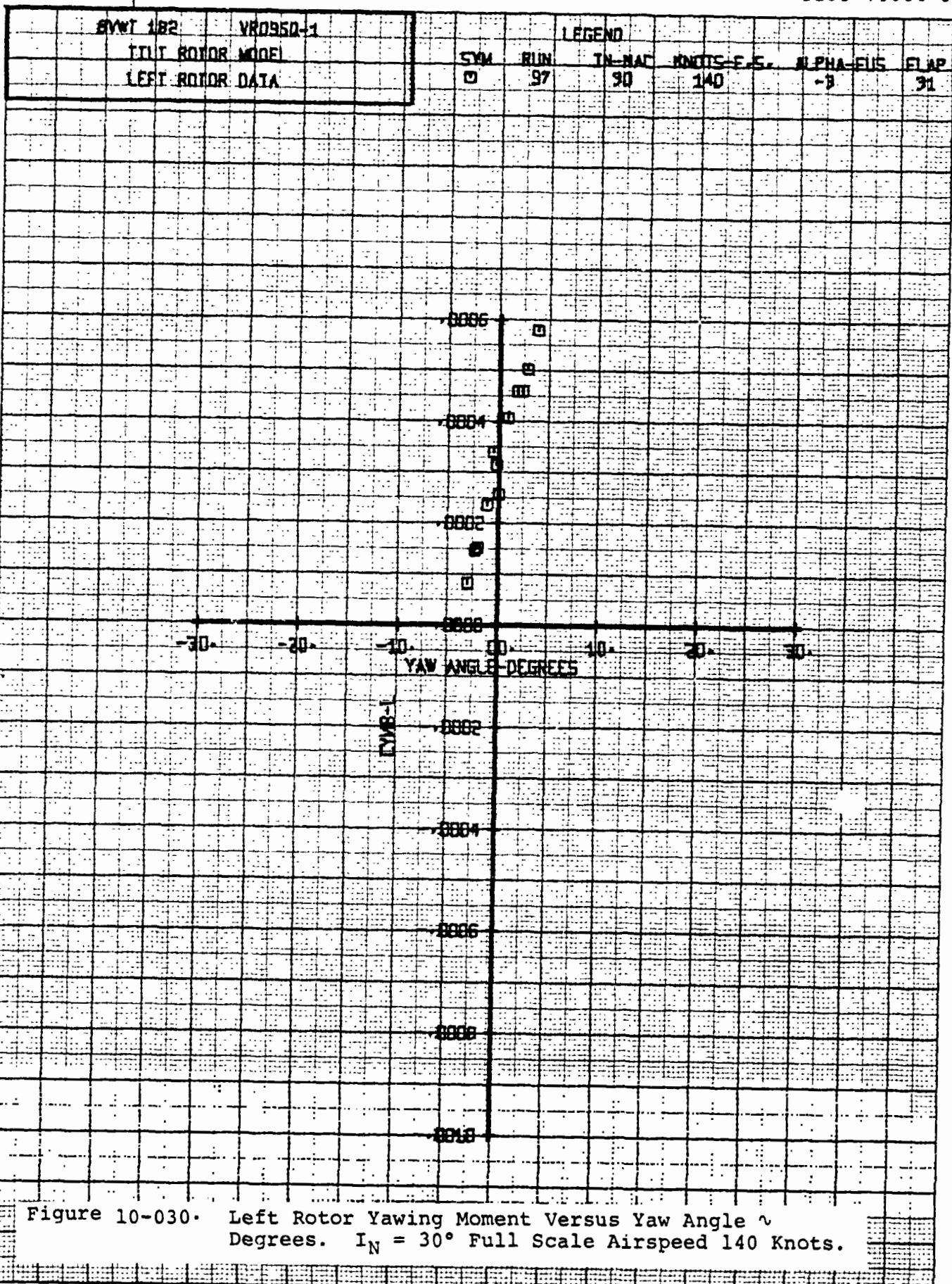


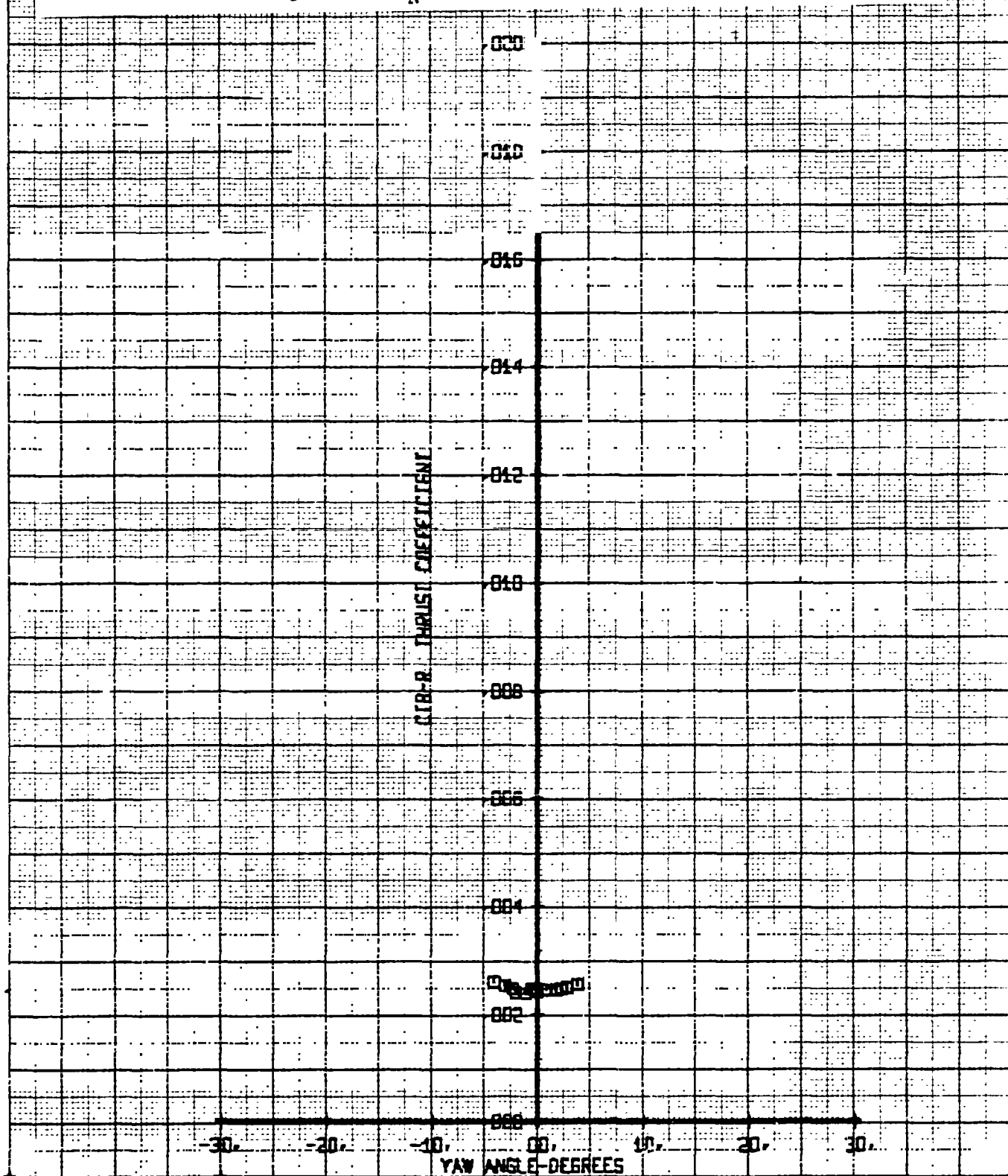
Figure 10-028. Left Rotor Side Force Coefficient Versus Yaw Angle in Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.





| | | | | | | | |
|---------------------|----------|-----|------|--------|------------|-----------|------|
| BYWT 182 | VR0950-1 | SYN | RIIN | IN-MAC | KNOTS-F.S. | ALPHA-FUS | FLAP |
| UTILITY ROTOR MODEL | | 0 | 97 | 30 | 140 | -3 | 31 |
| RIGHT ROTOR DATA | | | | | | | |

Figure 10-031. Right Rotor Thrust Coefficient Versus Yaw Angle ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.



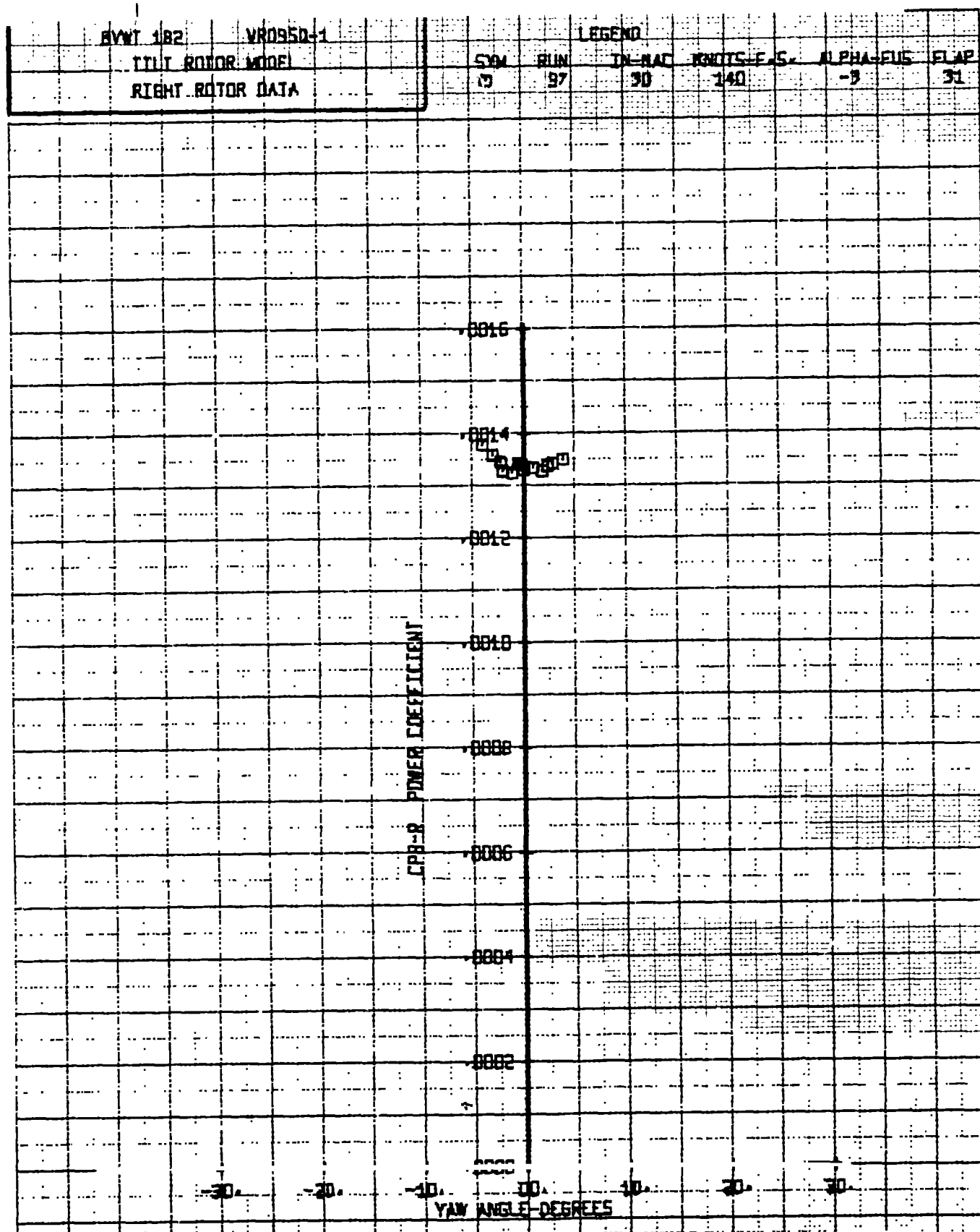
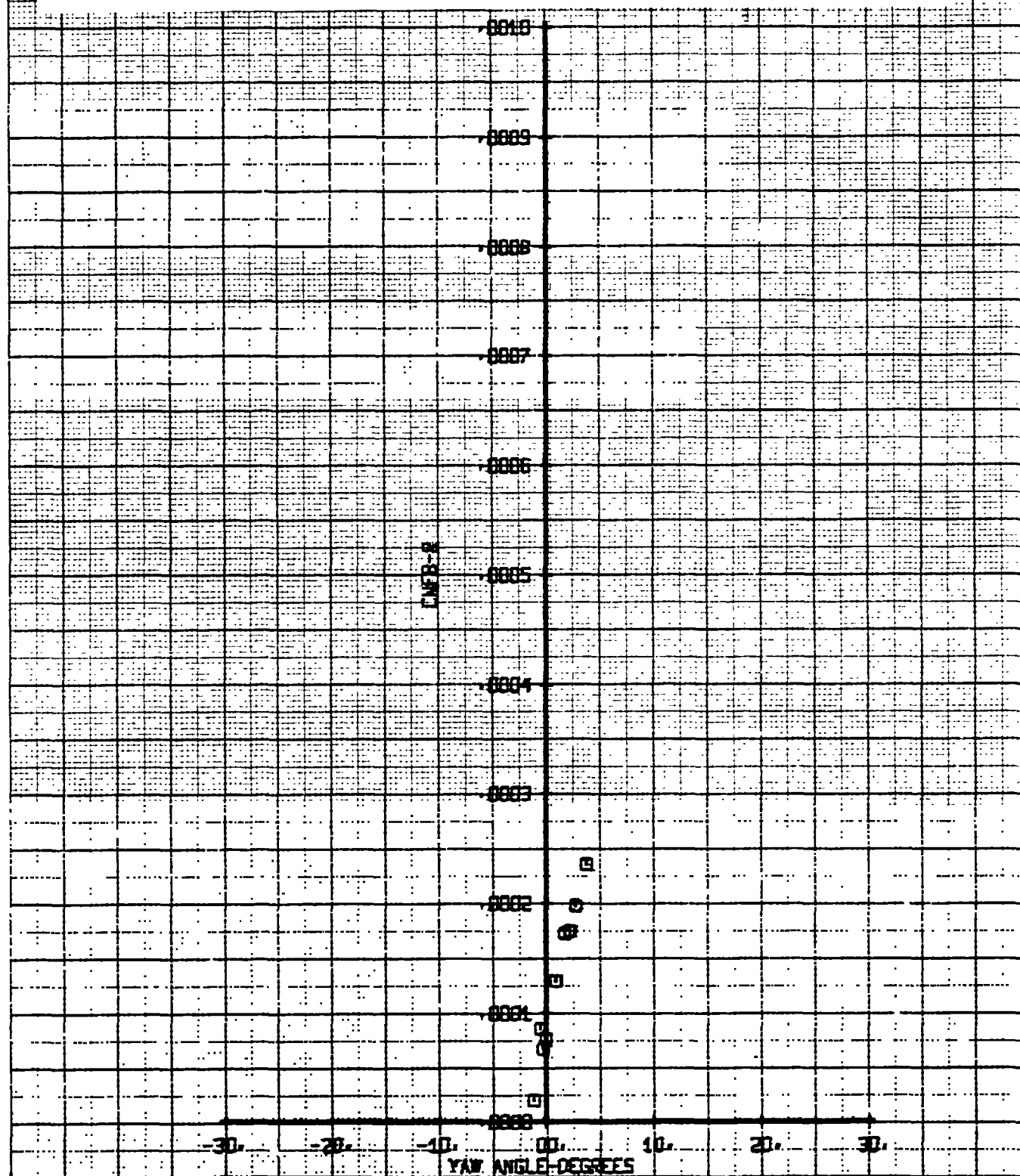
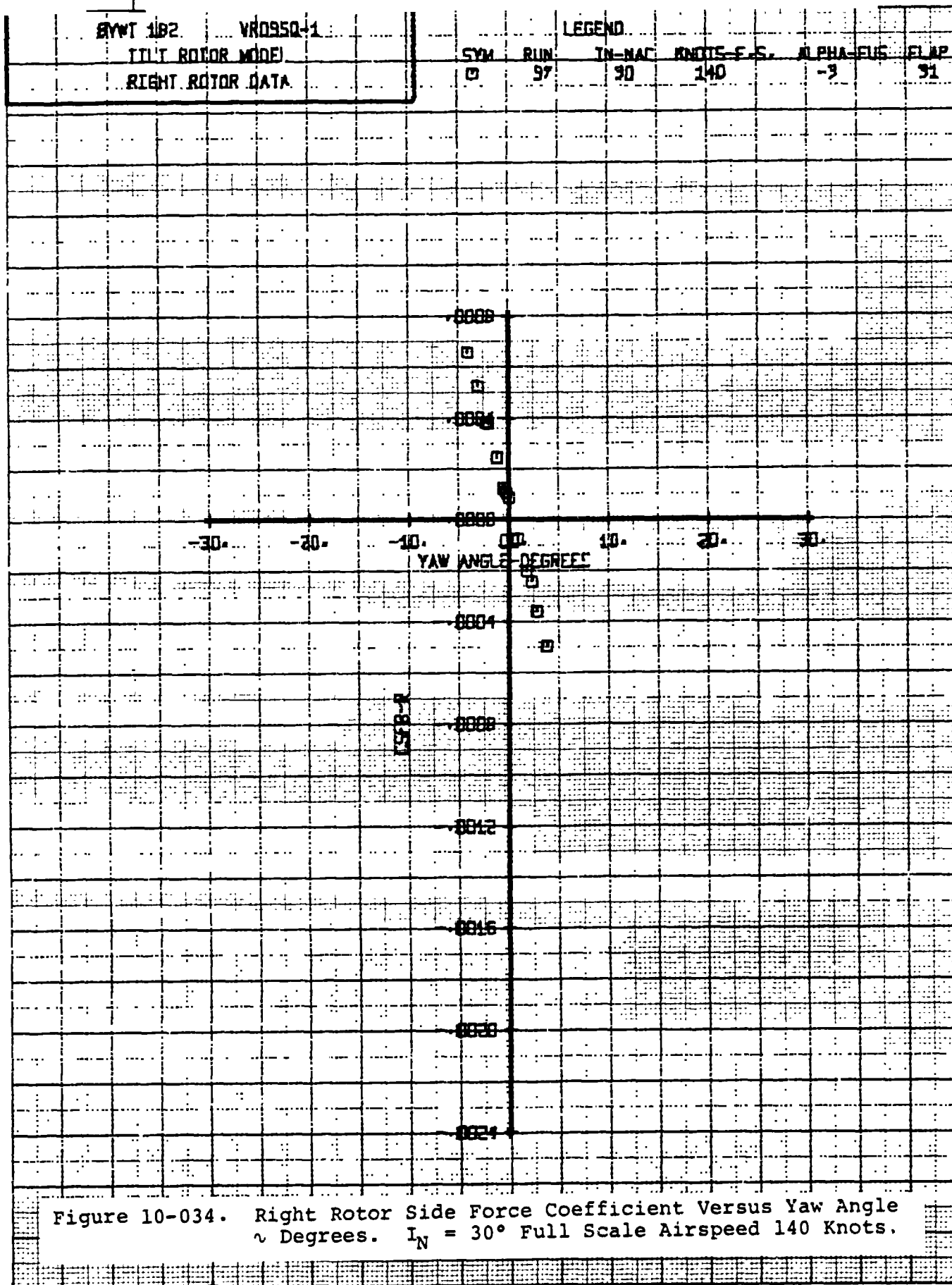


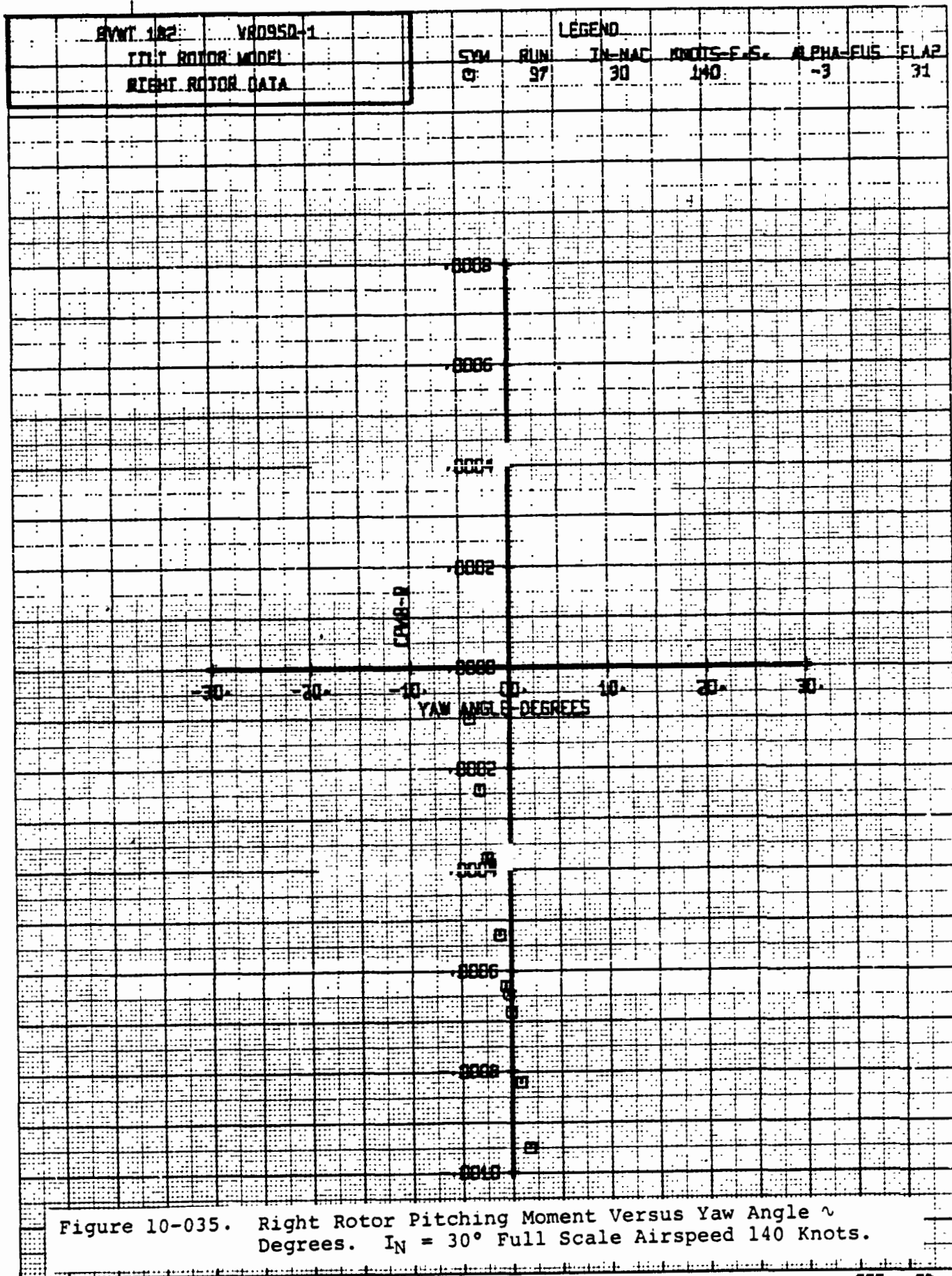
Figure 10-032. Right Rotor Power Coefficient Versus Yaw Angle ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.

| SYNOPSIS | | LEGEND | | | | |
|-------------|----------|--------|-----|--------|------------|-----------|
| SYNOPSIS | SYNOPSIS | SYN | SYM | IN-NAC | KNOTS-F.S. | ALPHA-FUS |
| RIGHT ROTOR | ATA | 0 | 97 | 30 | 140 | -3 |
| FLAP | | | | | | 31 |

Figure 10-033. Right Rotor Normal Force Coefficient Versus Yaw Angle ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.







| | | | | | |
|------------------|----------|--------|-----|--------|--------------|
| BVWT 182 | VR0950-1 | LEGEND | | | |
| TILT ROTOR MODEL | | SYM | RUN | IN-HAT | KNOTS-F.F.S. |
| RIGHT ROTOR DATA | | D | 97 | 90 | 140 |
| | | | | | ALPHA-FUS |
| | | | | | -9 |
| | | | | | FLAP |
| | | | | | 91 |

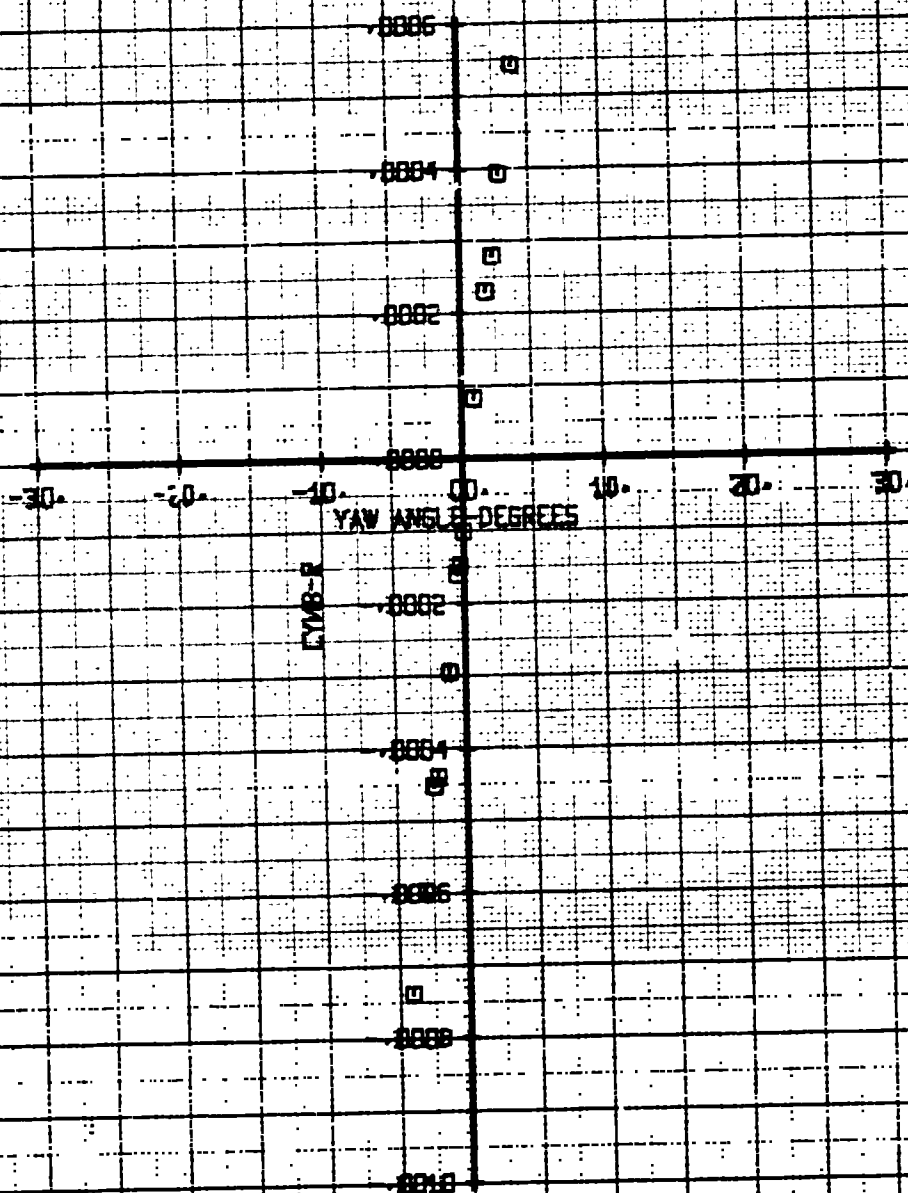
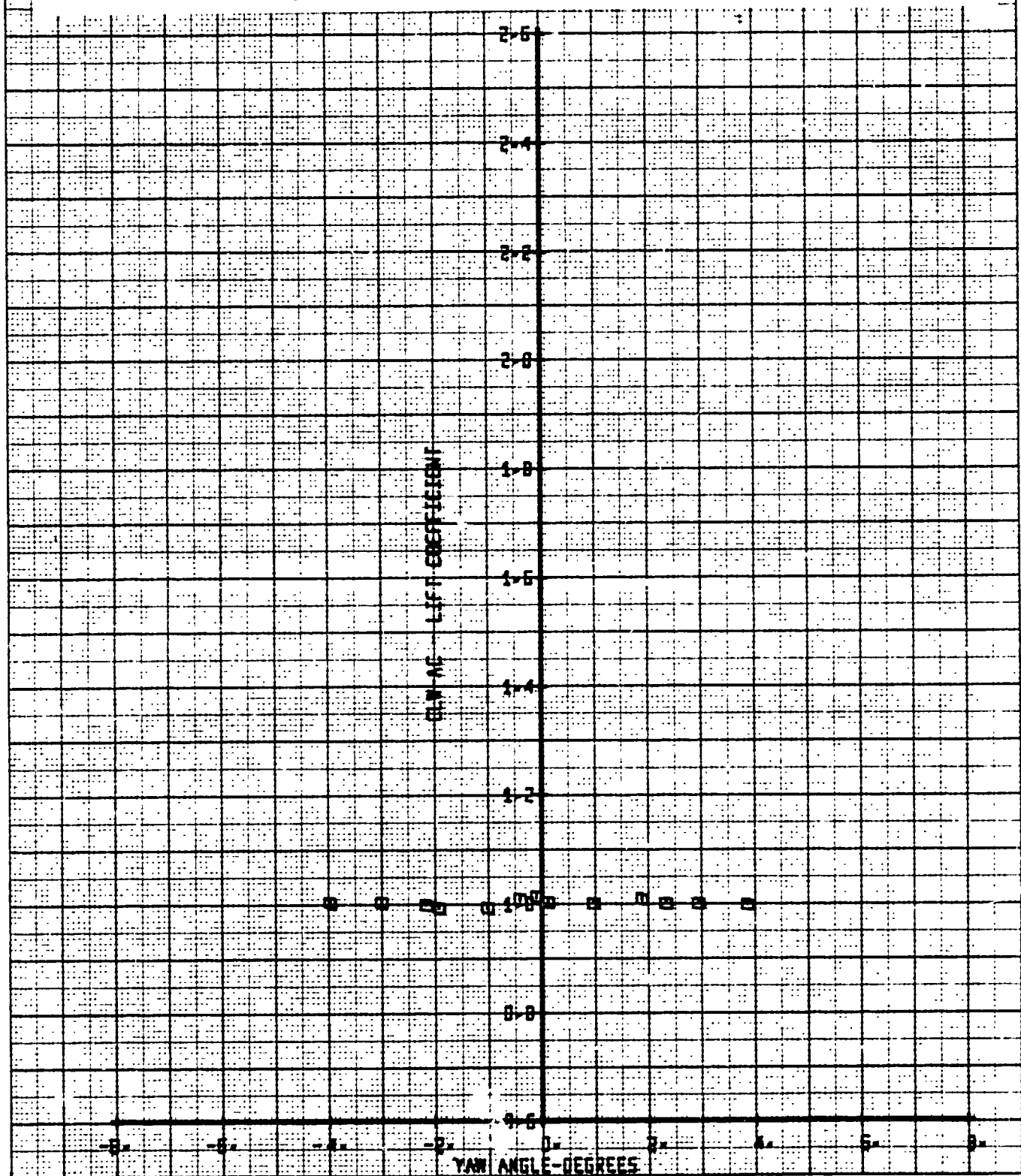
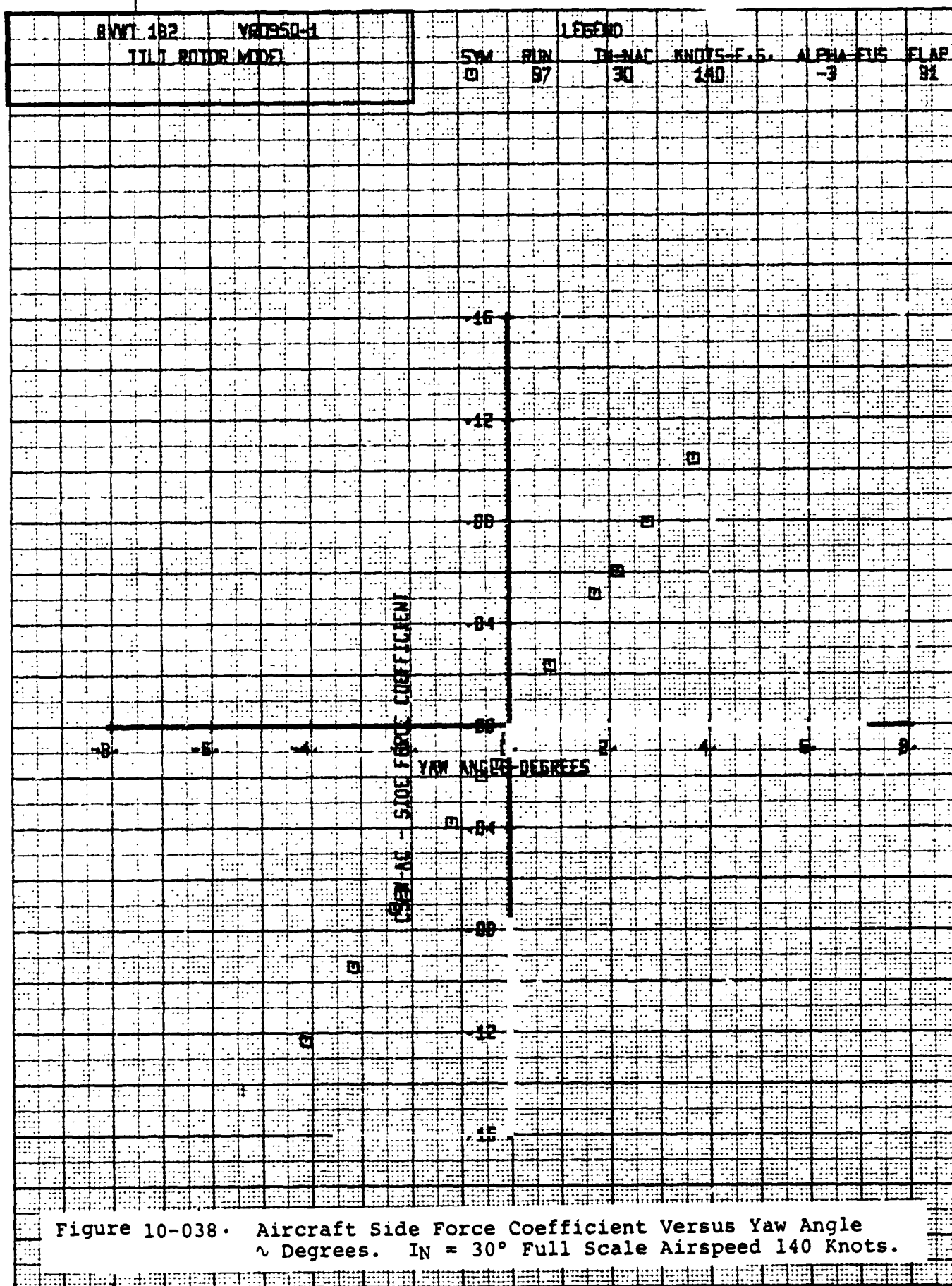


Figure 10-036. Right Rotor Yawing Moment Versus Yaw Angle Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.

| | | | | | | | | |
|-------------------|--|----------|--|--------|-----|--------|------------|---------|
| BVWT 182 | | VR0950-1 | | LEGEND | | | | |
| TIT 000000 000000 | | | | SYM | MIN | IN-NAT | KNOTS F.F. | PHA-FUS |
| | | | | B | 97 | 30 | 140 | -3 |
| | | | | | | | | FLAP |
| | | | | | | | | 31 |

Figure 10-037. Aircraft Lift Coefficient Versus Yaw Angle ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.





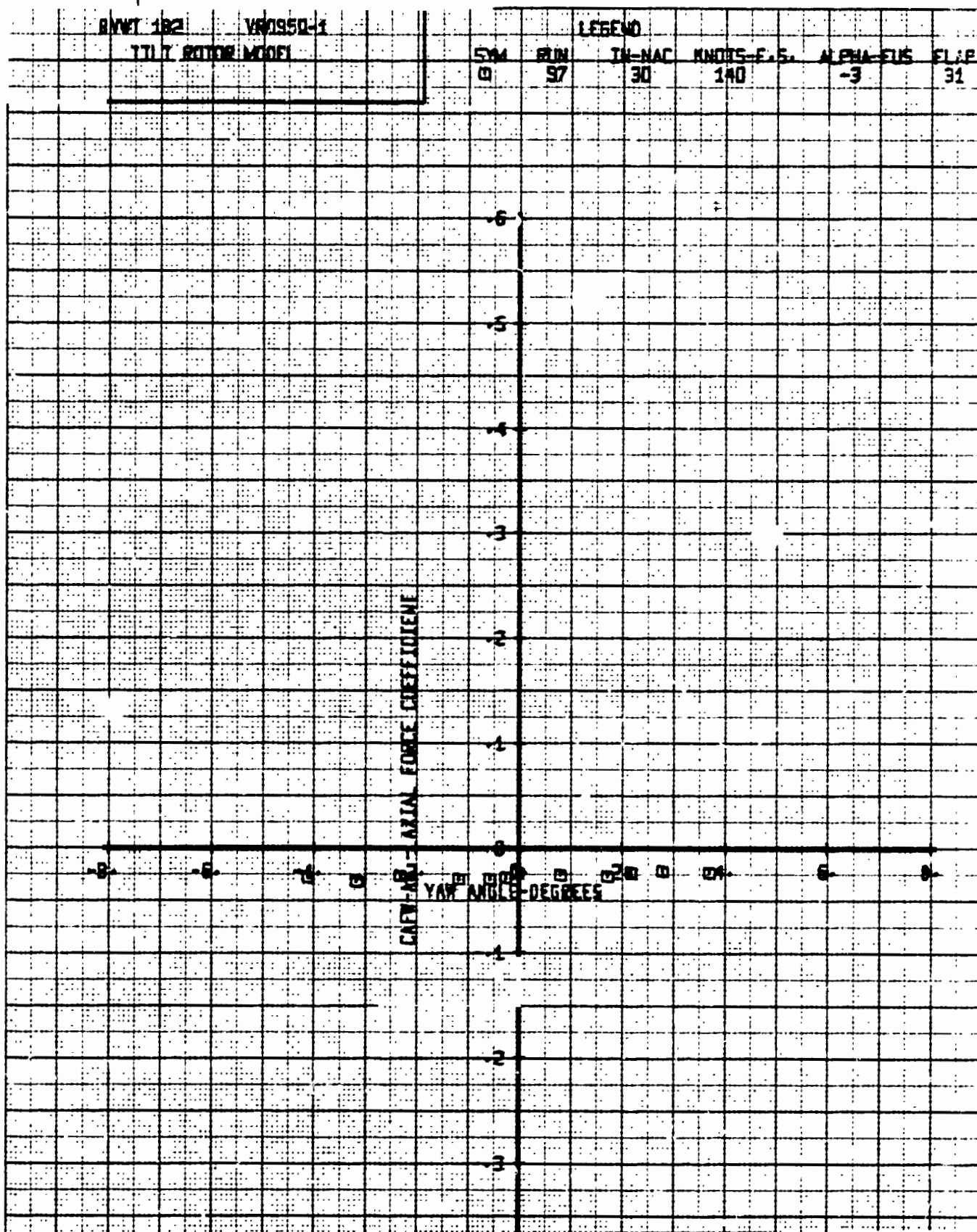
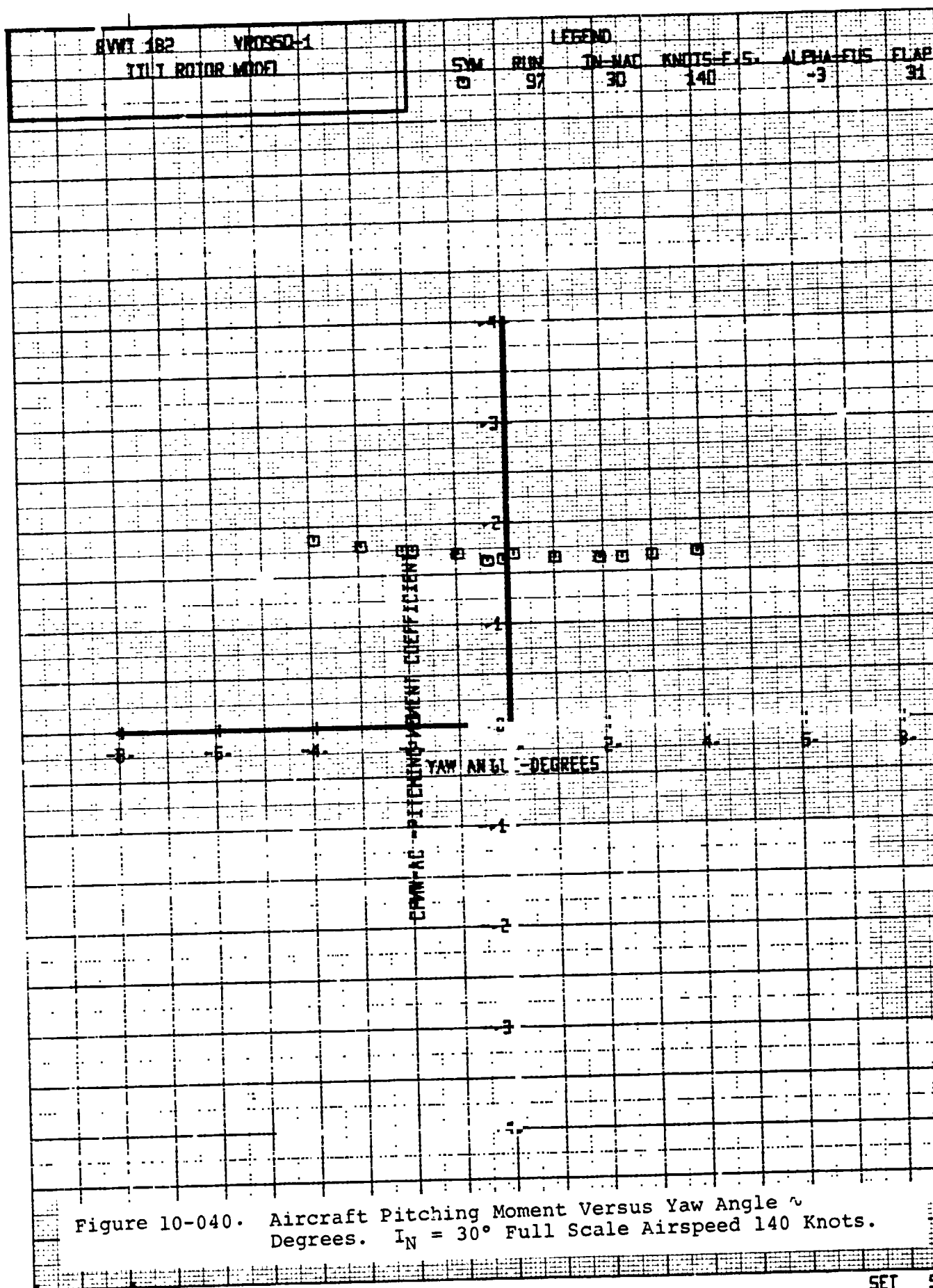


Figure 10-039. Aircraft Axial Force Coefficient Versus Yaw Angle
 \sim Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.



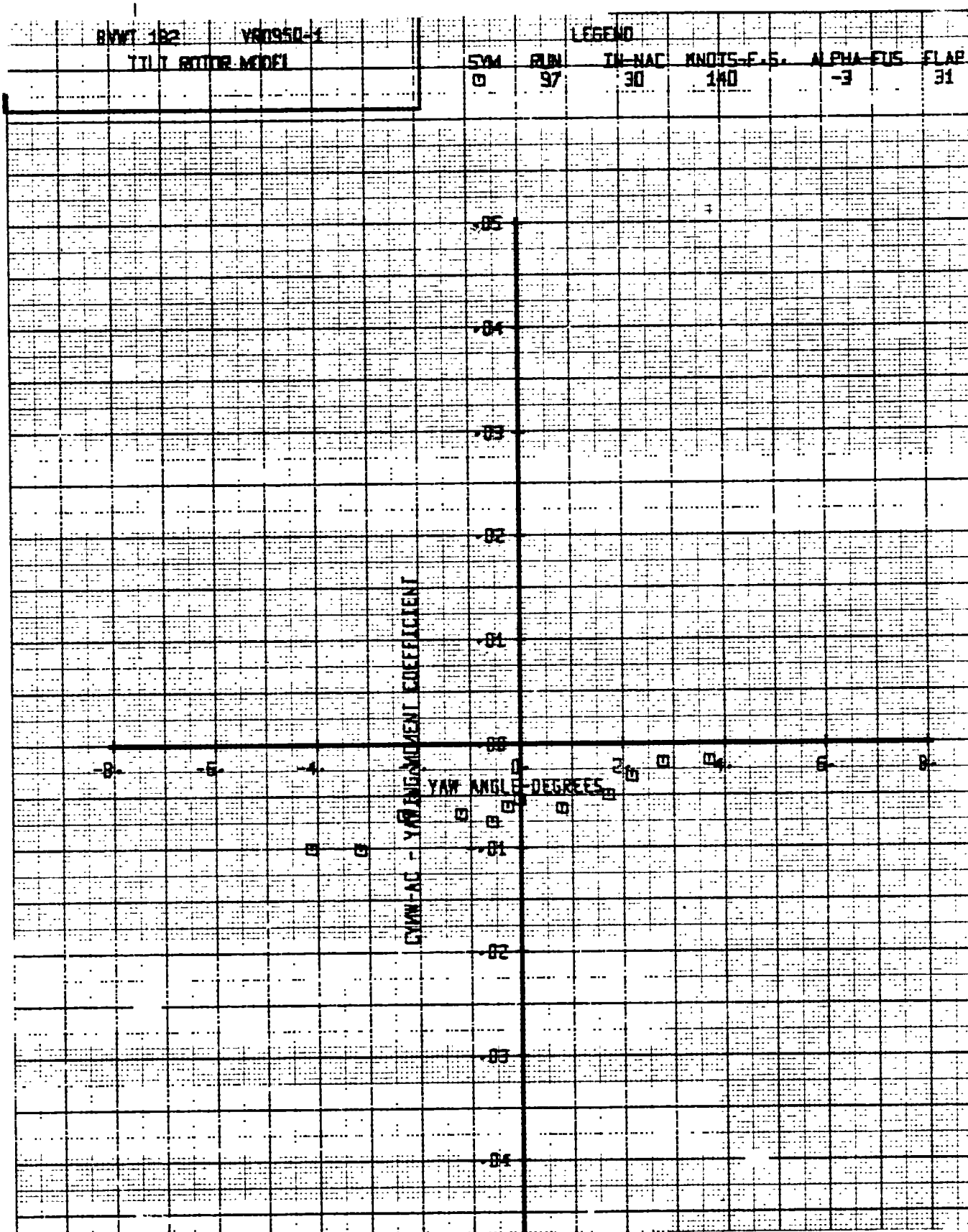
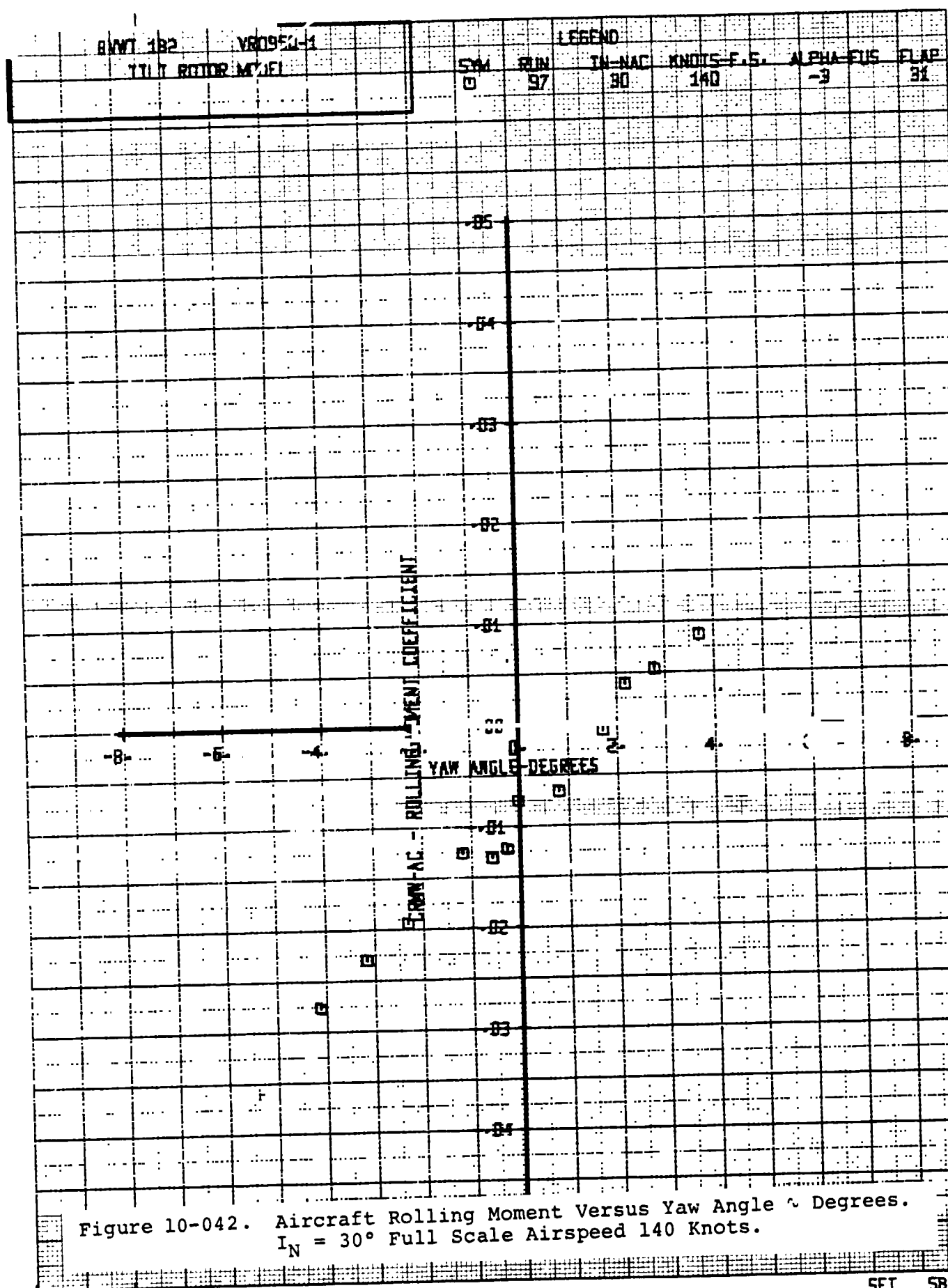
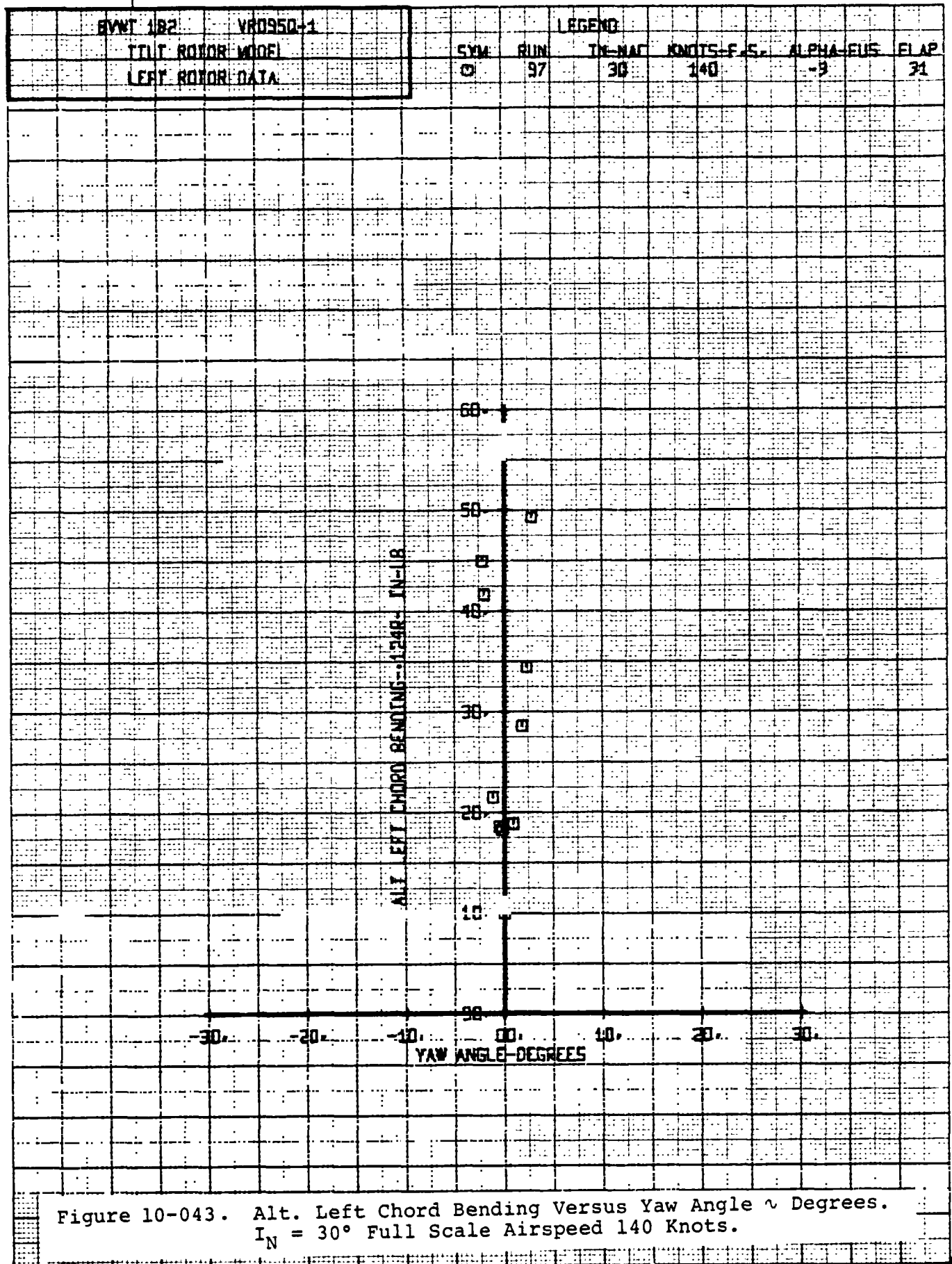


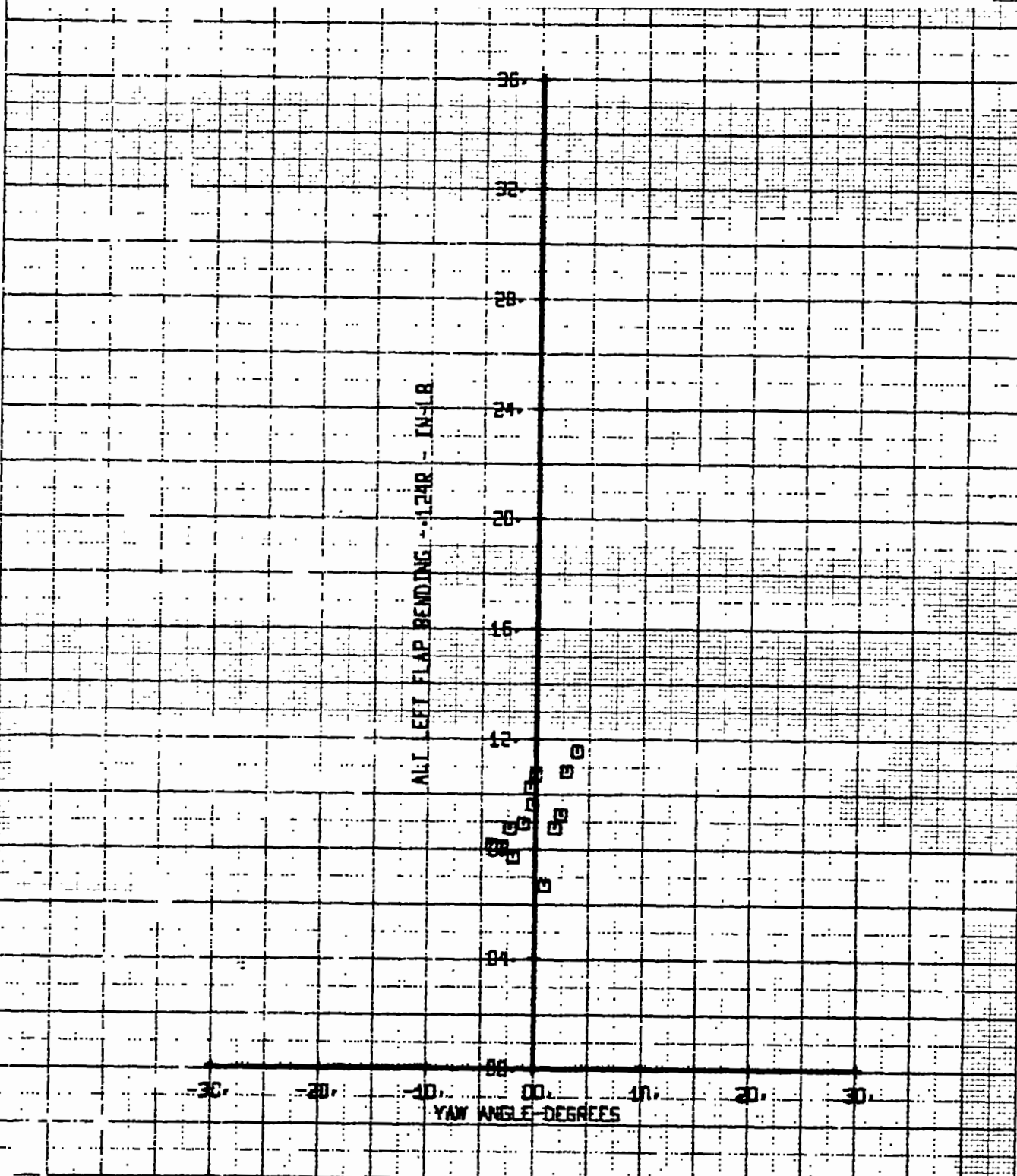
Figure 10-041. Aircraft Yawing Moment Versus Yaw Angle ~ Degrees.
 $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.





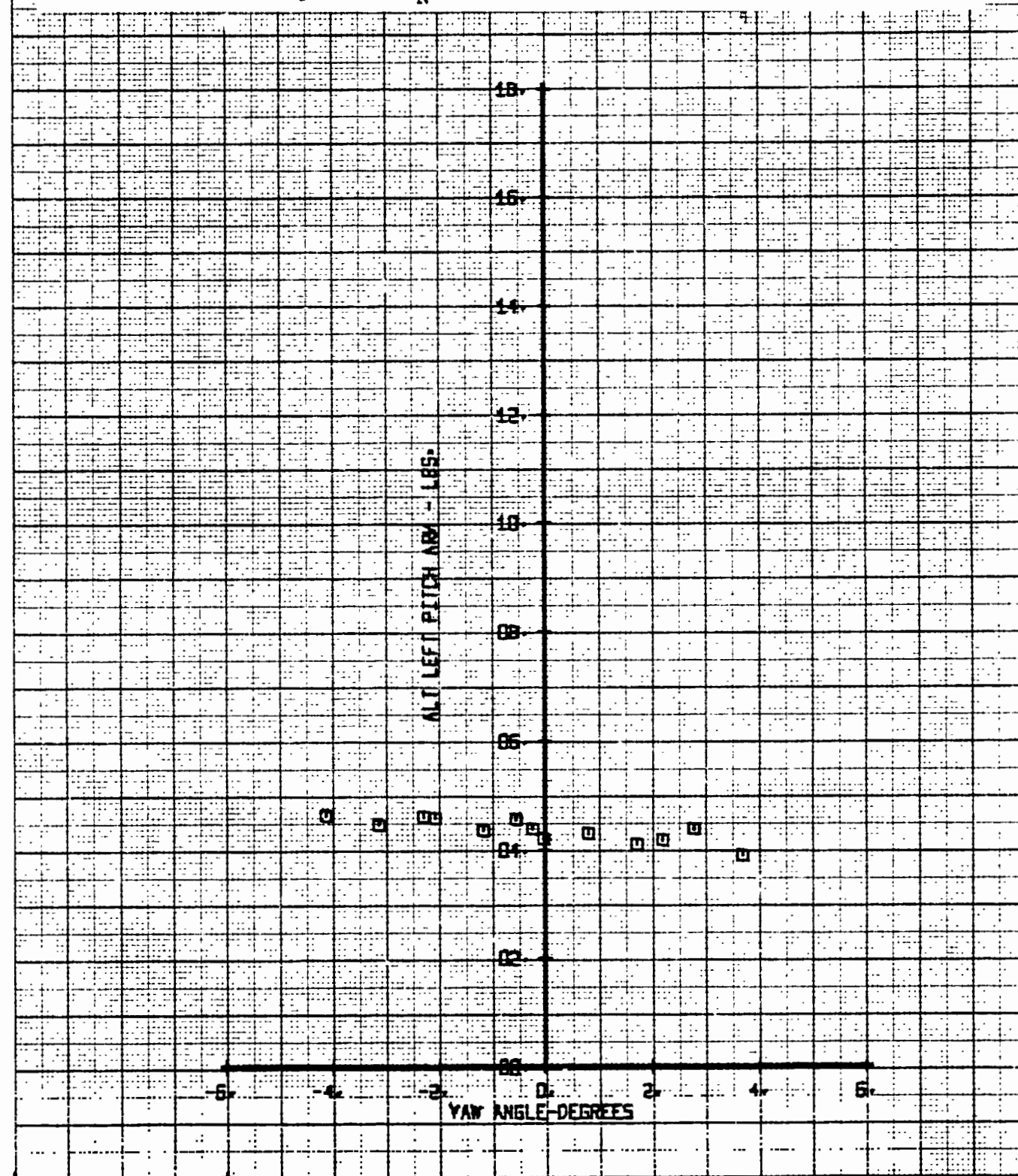
| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | VR0950-1 | LEGEND | | | | |
| TILT MOTOR MODEL | | SYM | RUN | IN-NAI | KNOTS-F.S. | ALPHA-FUS |
| LEFT MOTOR DATA | | 0 | 97 | 30 | 140 | -3 |
| | | | | | | 31 |

Figure 10-14. Alt. Left Flap Bending Versus Yaw Angle α Degrees.
 $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.



| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-------|
| BWV 182 | VR0950-1 | LEGEND | | | | |
| LEFT ROTOR MODEL | | SYM | RUN | IN-NAE | KNOWS-F.S. | ALPHA |
| LEFT ROTOR DATA | | □ | 97 | 30 | 140 | -3 |
| | | | | | | FLAP |
| | | | | | | 31 |

Figure 10-045. Alt. Left Pitch Link Load Versus Yaw Angle ~
Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.



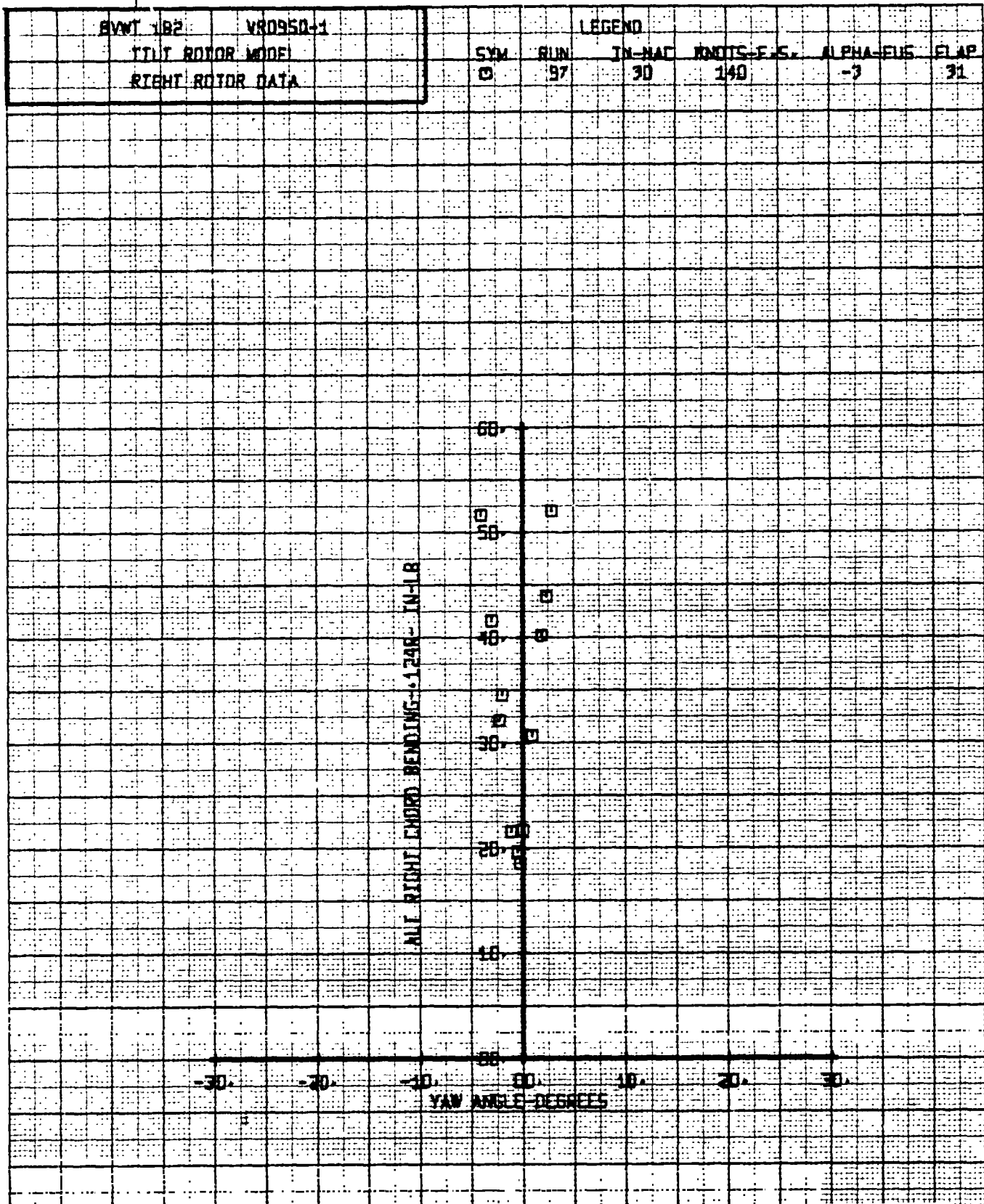
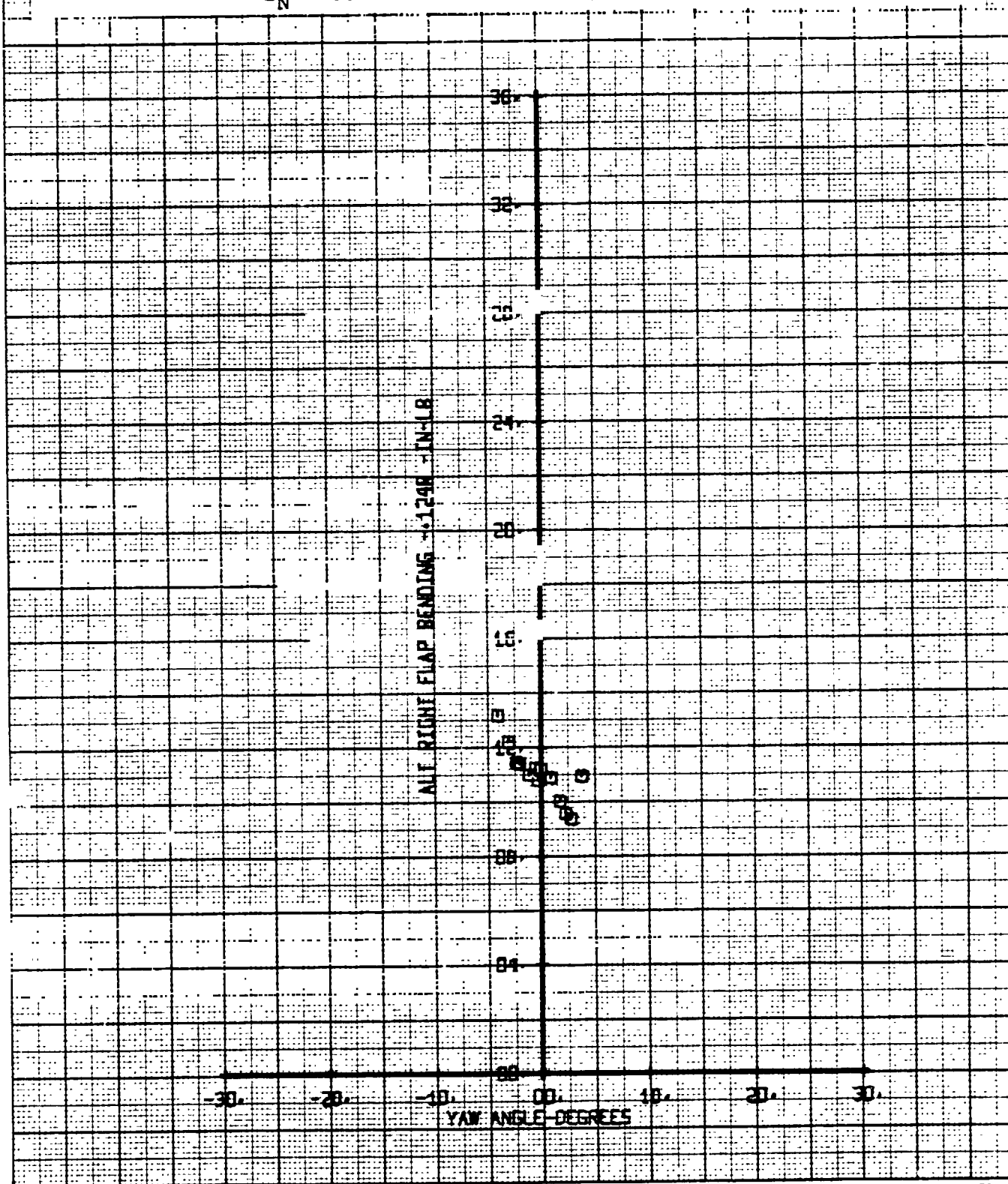


Figure 10-046. Alt. Right Chord Bending Versus Yaw Angle ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.

| | | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|------|
| BVWT 182 | VR0950-1 | LEGEND | | | | | |
| LEFT ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FUS | FLAP |
| RIGHT ROTOR DATA | | 0 | 97 | 30 | 140 | -3 | 31 |

Figure 10-047. Alt. Right Flap Bending Versus Yaw Angle α Degrees.
 $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.



BWWT 182 VR0950-1

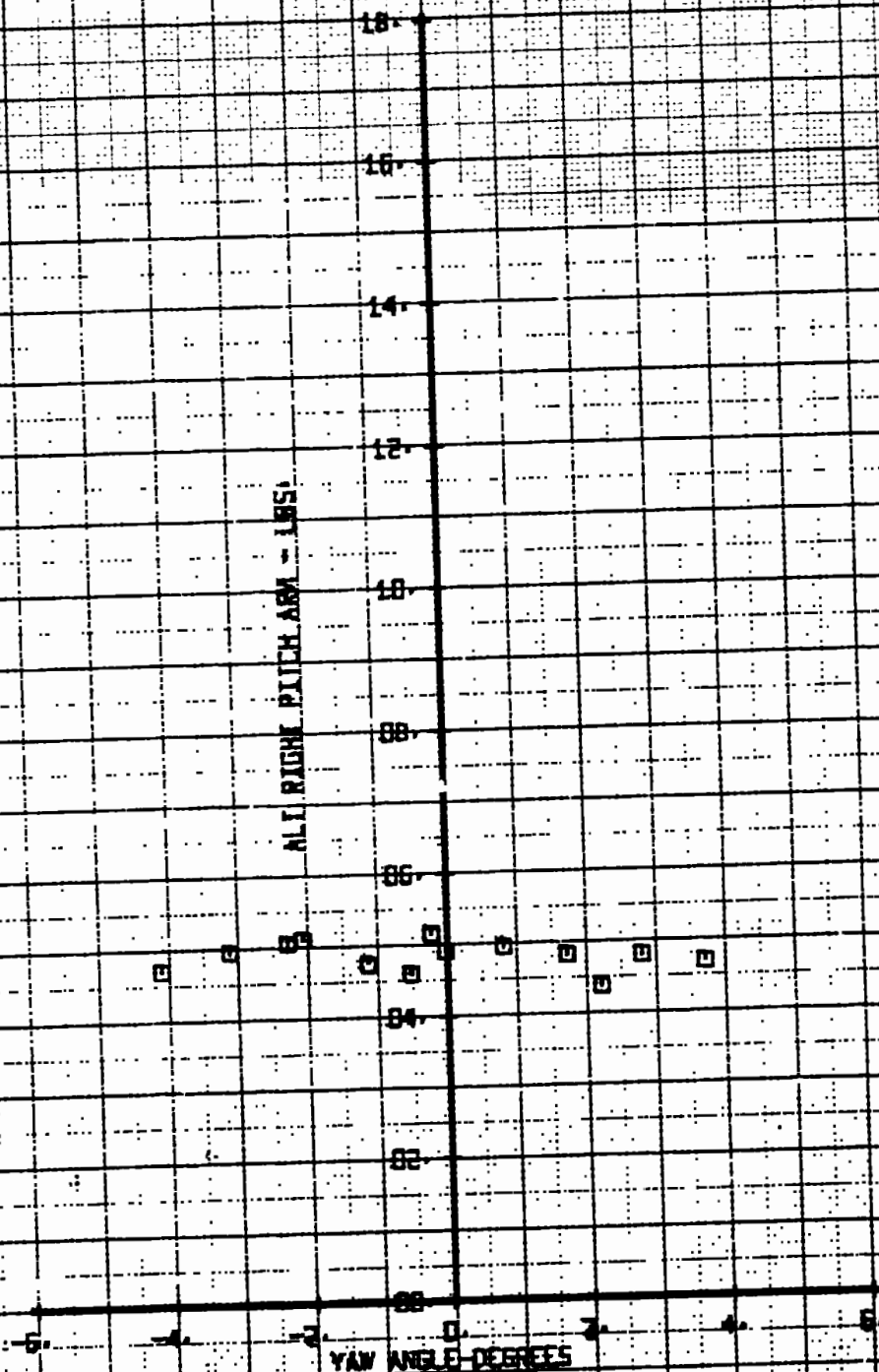
TILT ROTOR MODEL

RIGHT ROTOR DATA

LEGEND

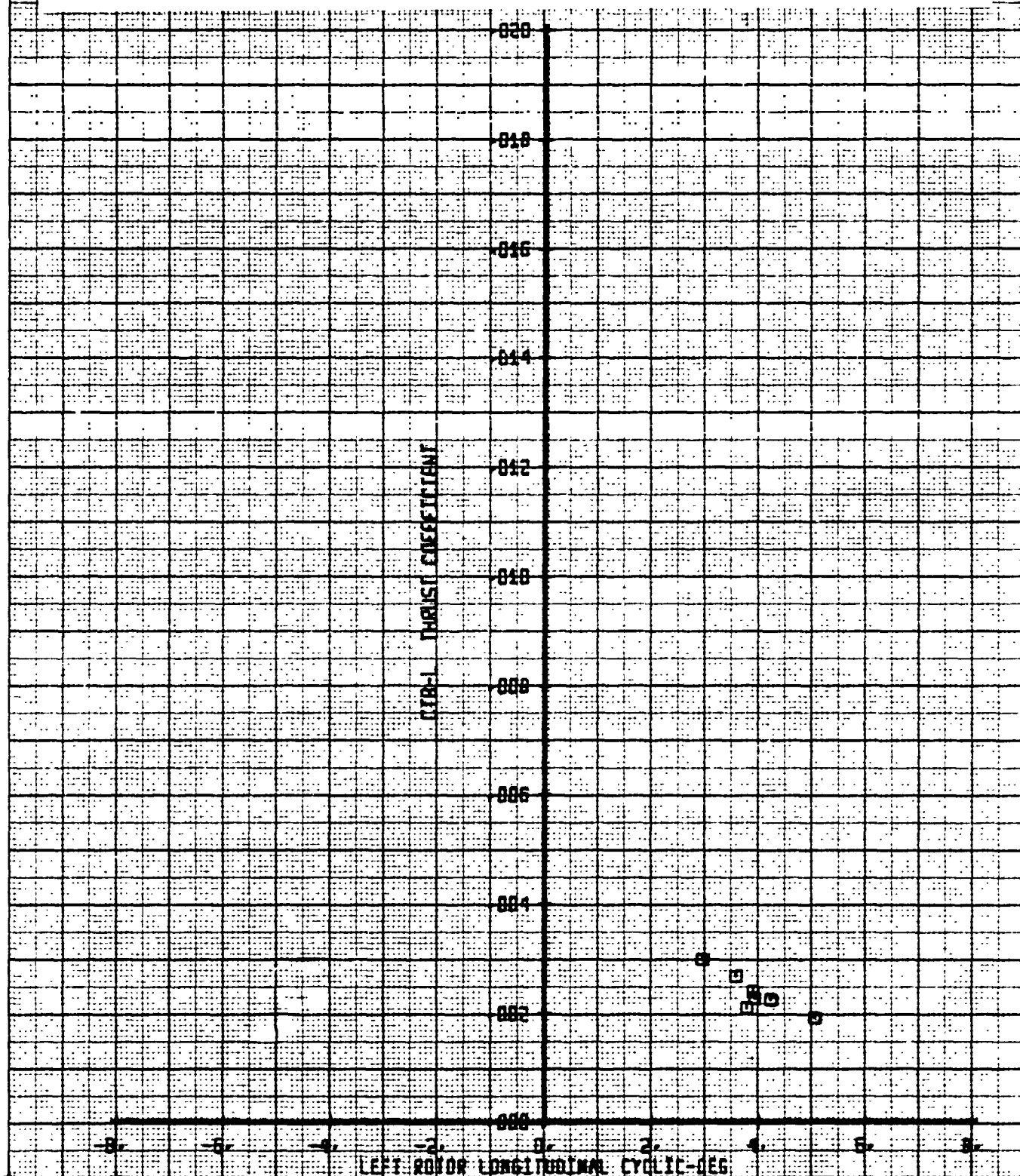
SYM
□RUN
97IN-NAC
30KNOTS-F.S.
140ALPHA-FUS
-3FLAP
31

Figure 10-048. Alt. Right Pitch Link Load Versus Yaw Angle α Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.



| | | | | | | |
|-----------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | VR095D-1 | LEGEND | | | | |
| LEFT ROTOR MODE | | SW | RUN | IN-MAC | KNOTS-F.S. | ALPHA-FUS |
| LEFT ROTOR DATA | | 0 | 99 | 30 | 140 | -8 |
| | | | | | | 31 |

Figure 10-049. Left Rotor Thrust Coefficient Versus Left Rotor Long. Cyclic α Degrees. $I_N = 30^\circ$ Full Scale
Airspeed 140 Knots.



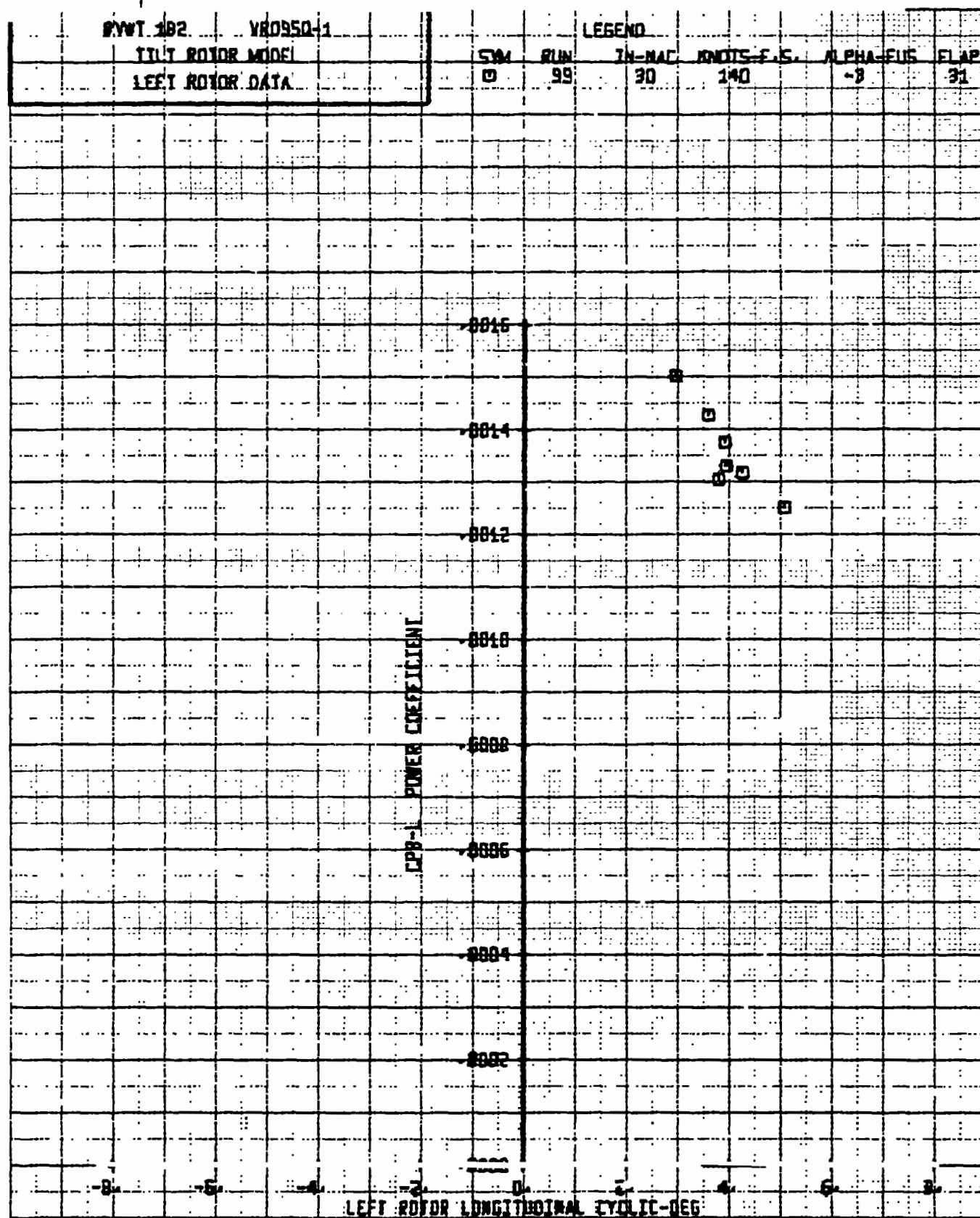


Figure 10-050. Left Rotor Power Coefficient Versus Left Rotor Long. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.

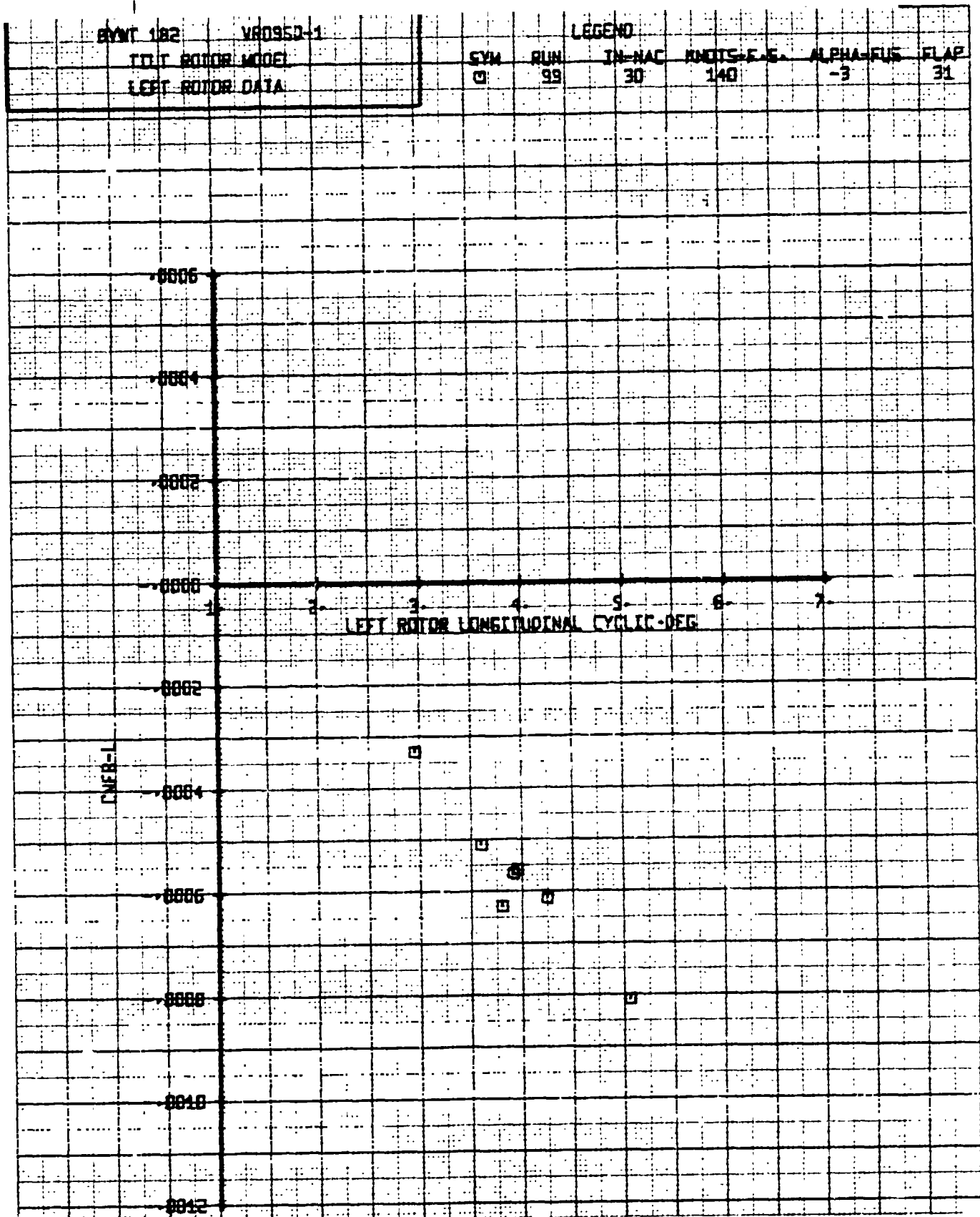
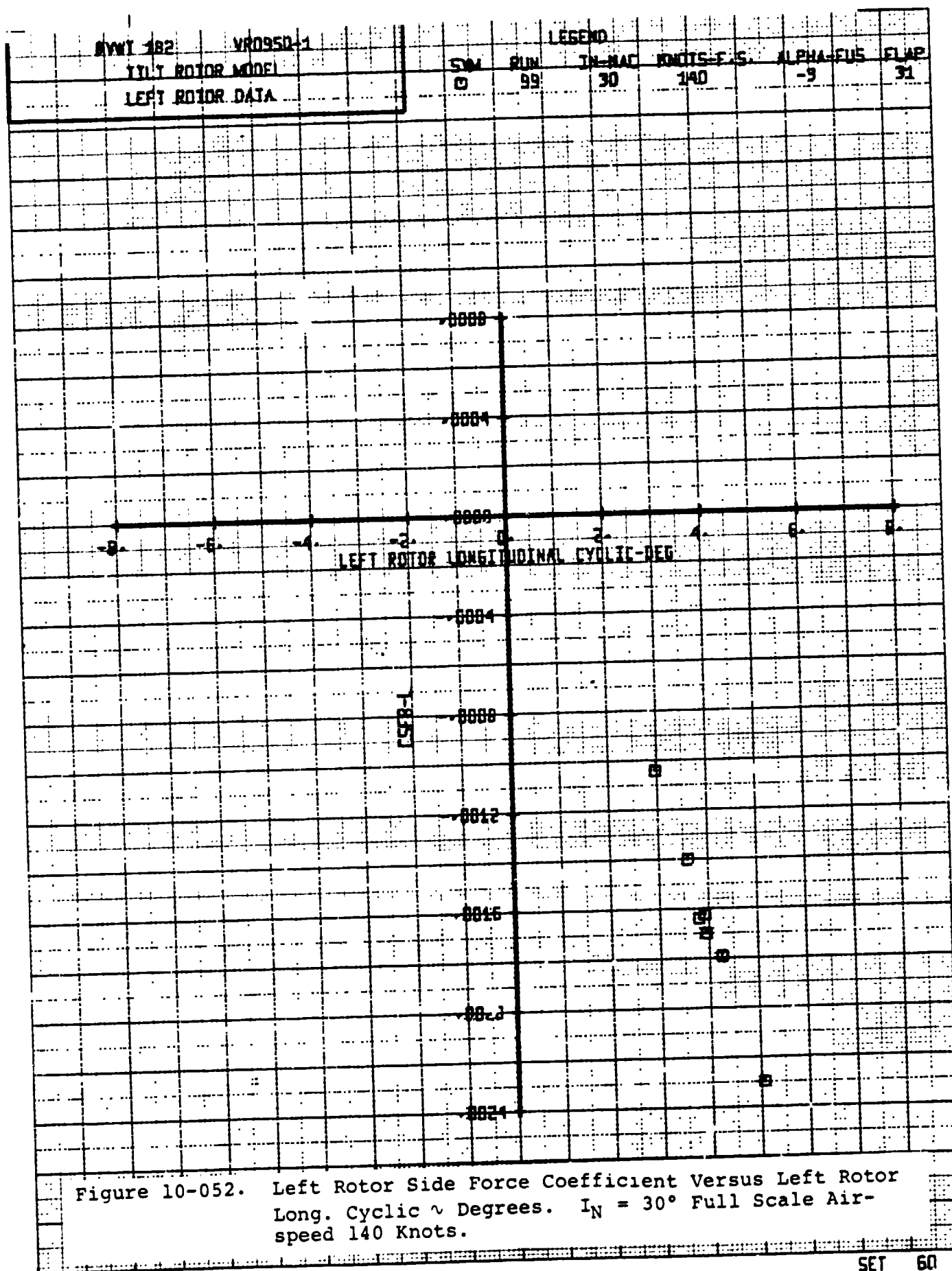
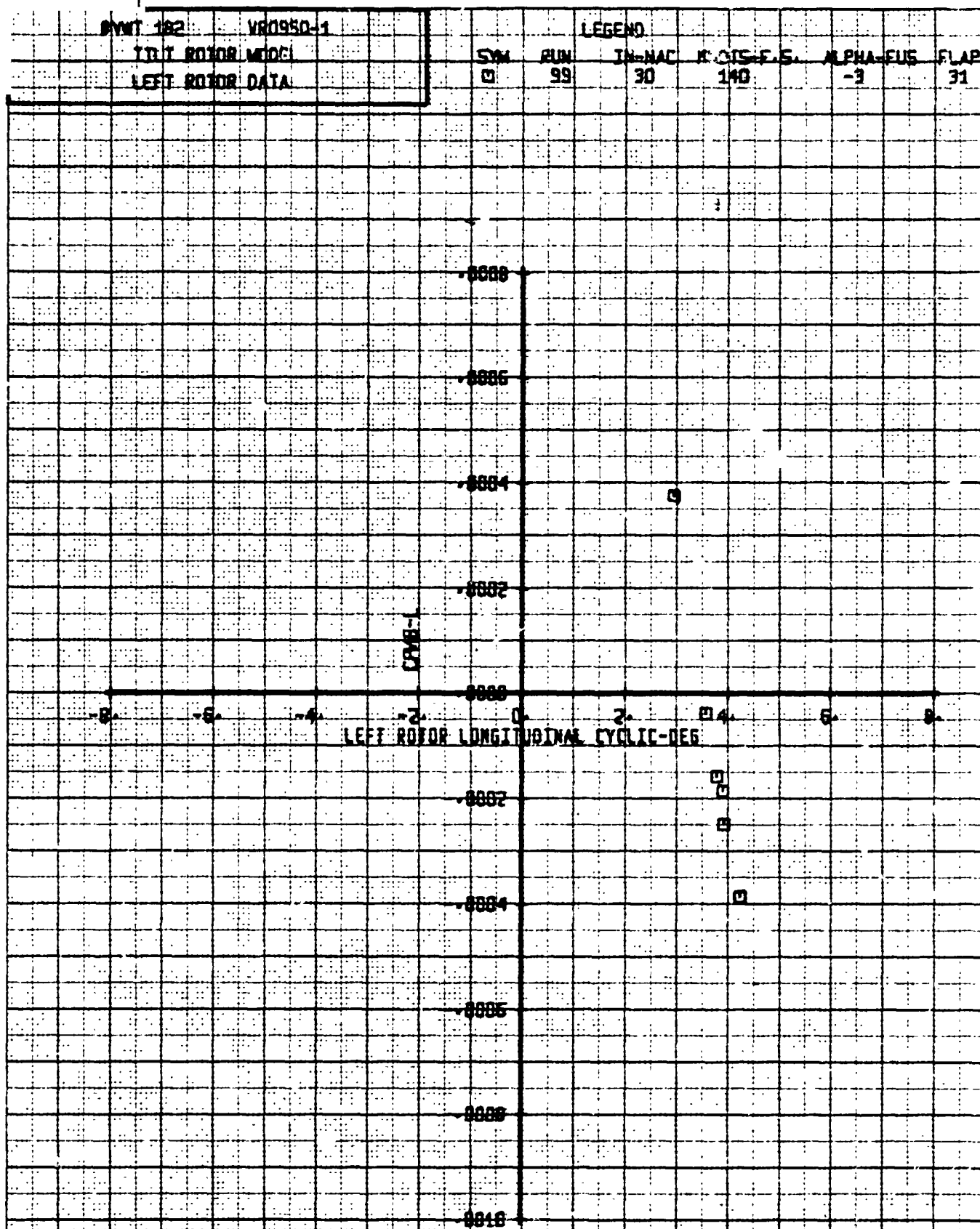
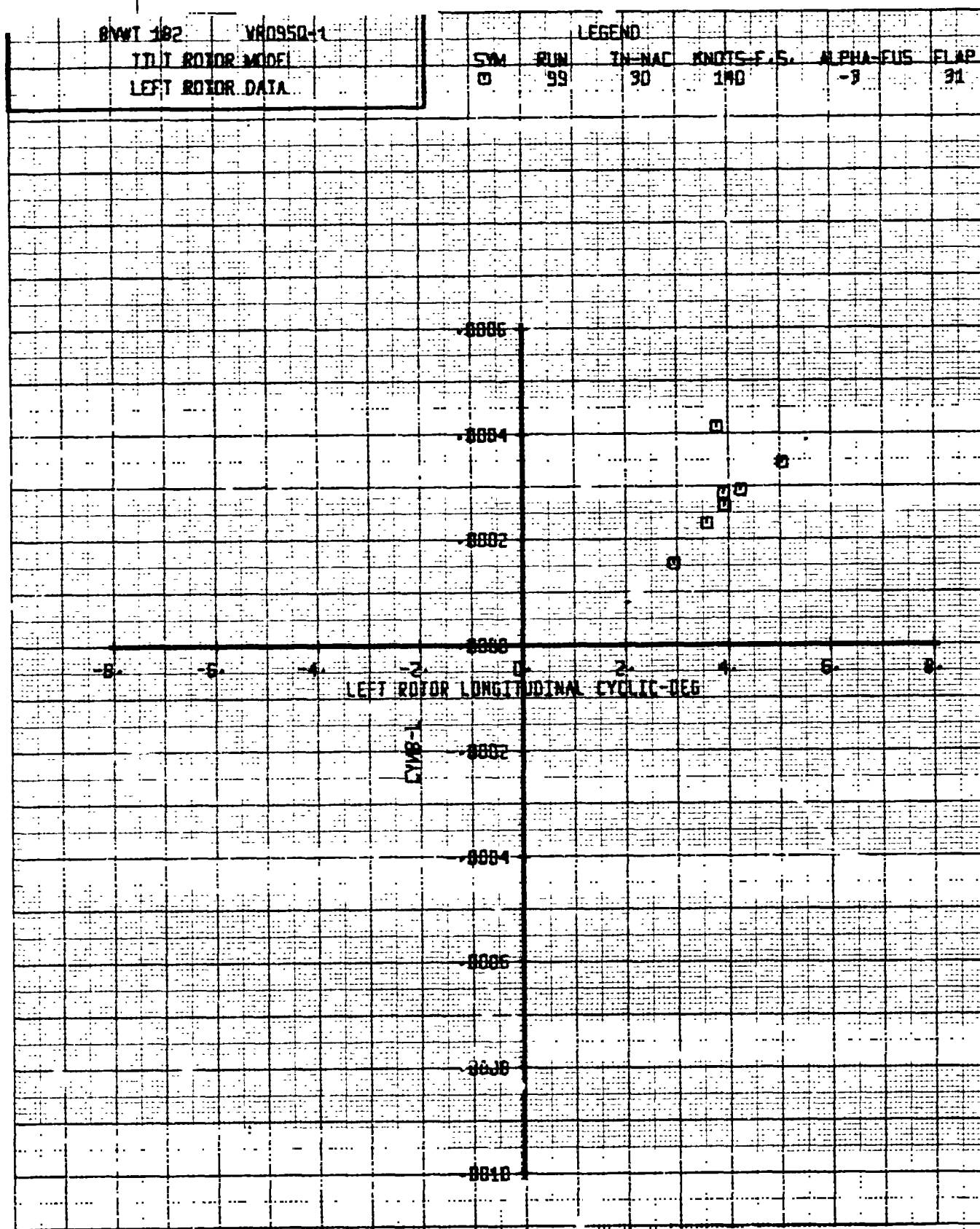


Figure 10-051. Left Rotor Normal Force Coefficient Versus Left Rotor Long. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.

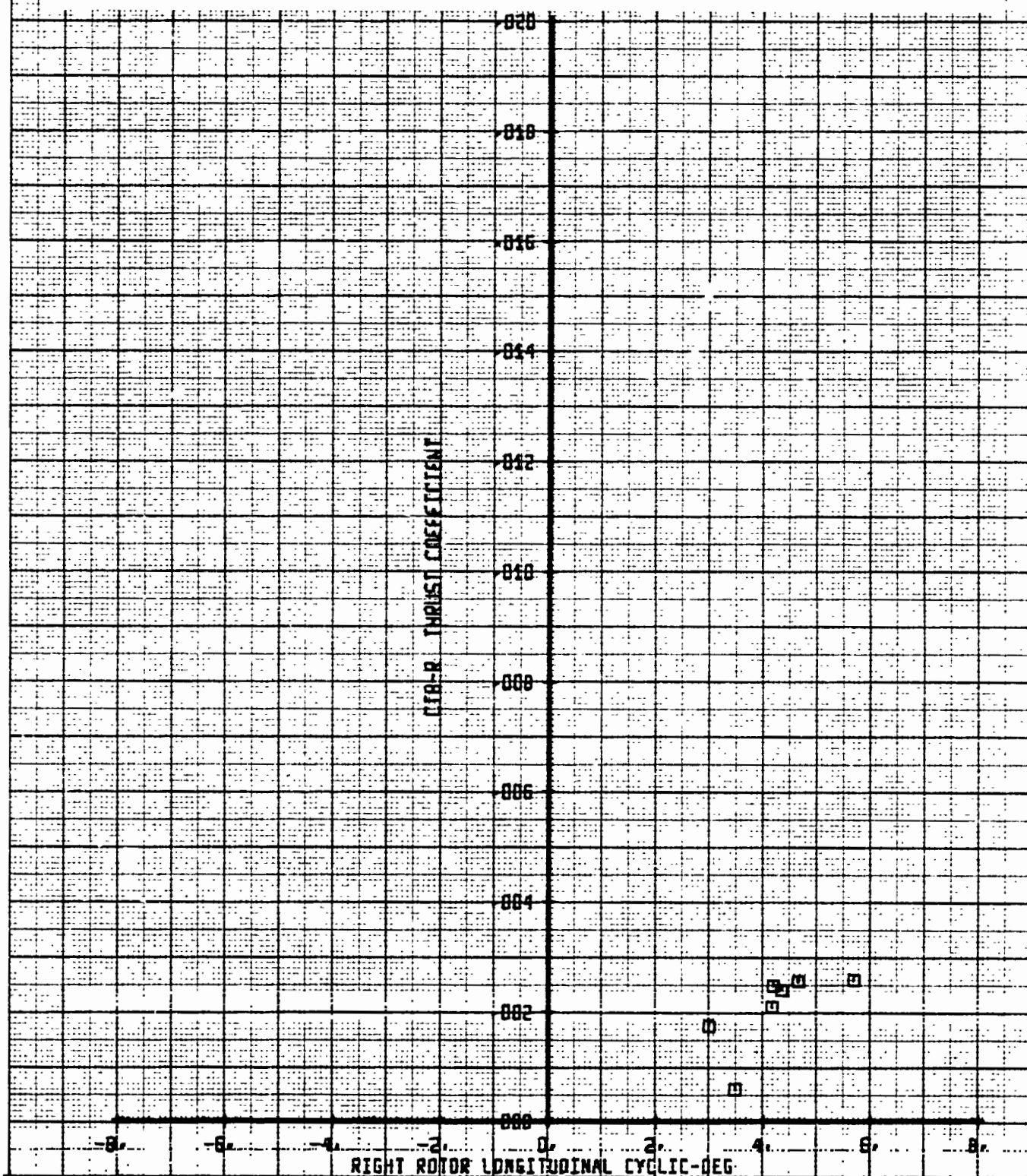






| | | | | | | | | |
|-------------------|----------|--------|-----|--------|------------|-----------|------|--|
| BVWT 182 | VR0950-1 | LEGEND | | | | | | |
| RIGHT ROTOR MODEL | | SYM | RUN | IN-MAC | KNOTS-F.S. | ALPHA-FUS | FLAP | |
| RIGHT ROTOR DATA | | 0 | 99 | 30 | 140 | -3 | 71 | |

Figure 10-055. Right Rotor Thrust Coefficient Versus Right Rotor Long. Cyclic ψ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.



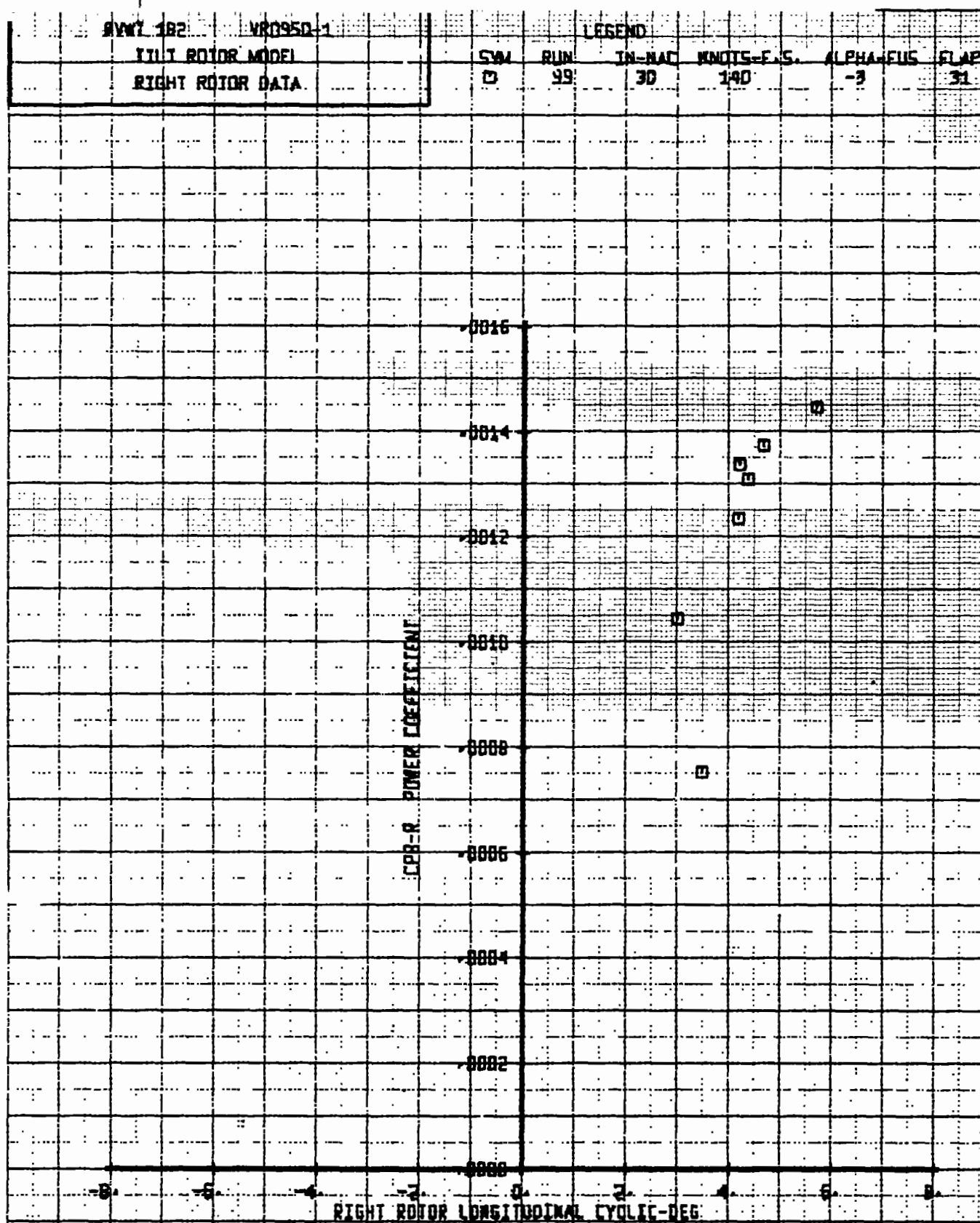
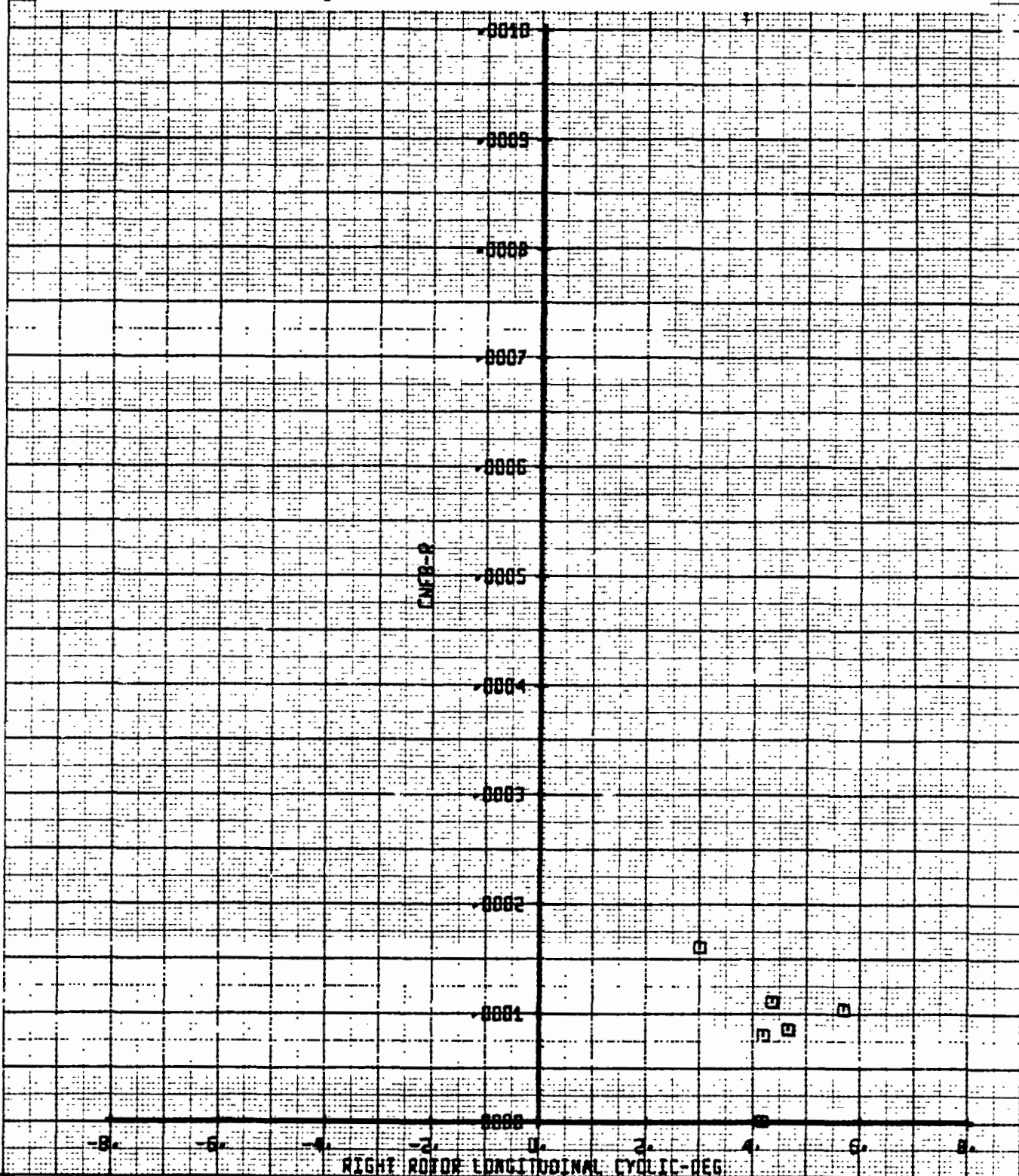


Figure 10-056. Right Rotor Power Coefficient Versus Right Rotor Long. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.

| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | VR0950-1 | LEGEND | | | | |
| TILT ROTOR MODE | | SYM | RUN | IN-NAE | KNOTS-F.S. | ALPHA-FUS |
| RIGHT ROTOR DATA | | □ | 99 | 30 | 140 | -3 |
| | | | | | | FLAP 31 |

Figure 10-057. Right Rotor Normal Force Coefficient Versus Right Rotor Long. Cyclic ψ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.



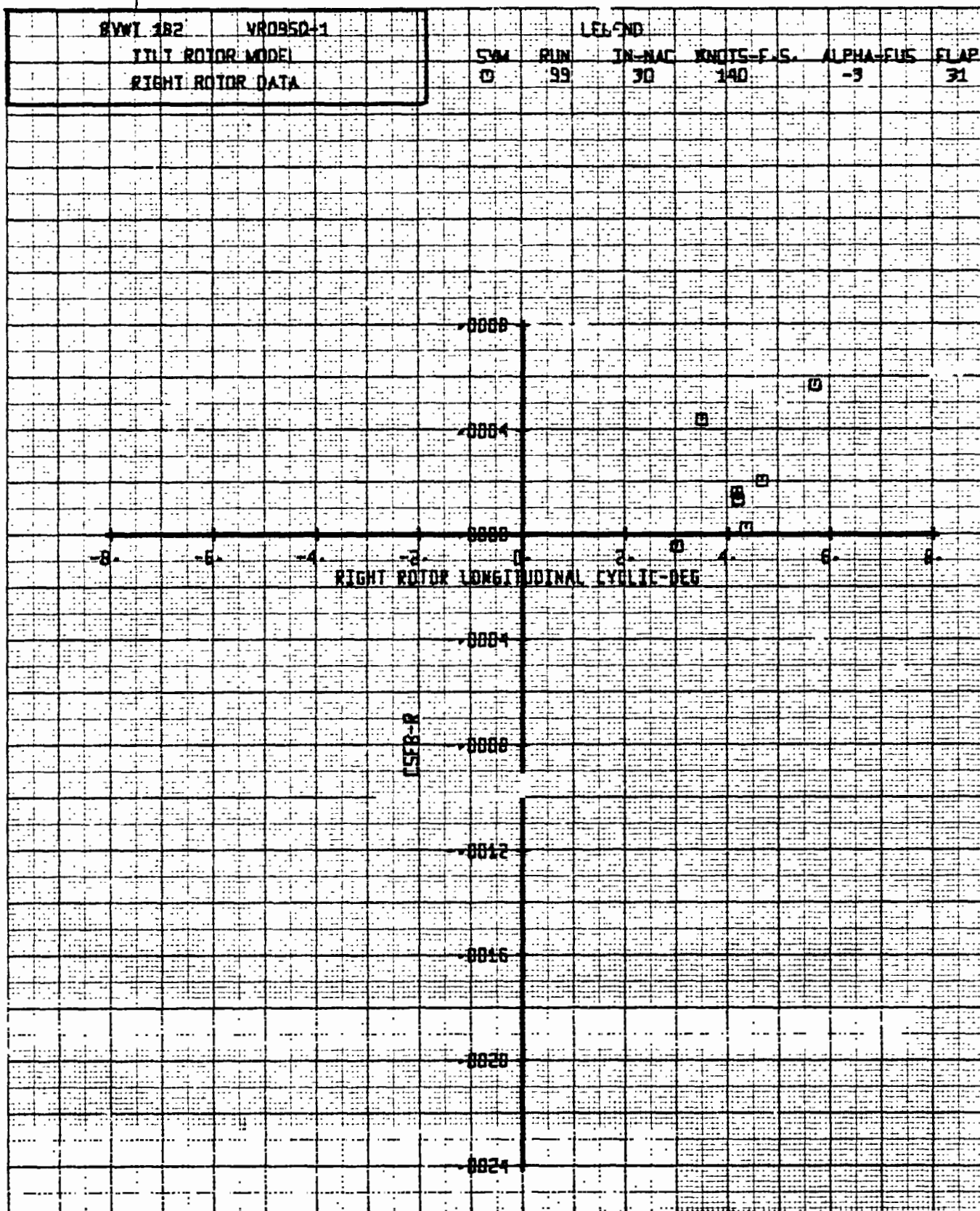


Figure 10-058. Right Rotor Side Force Coefficient Versus Right Rotor Long. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.

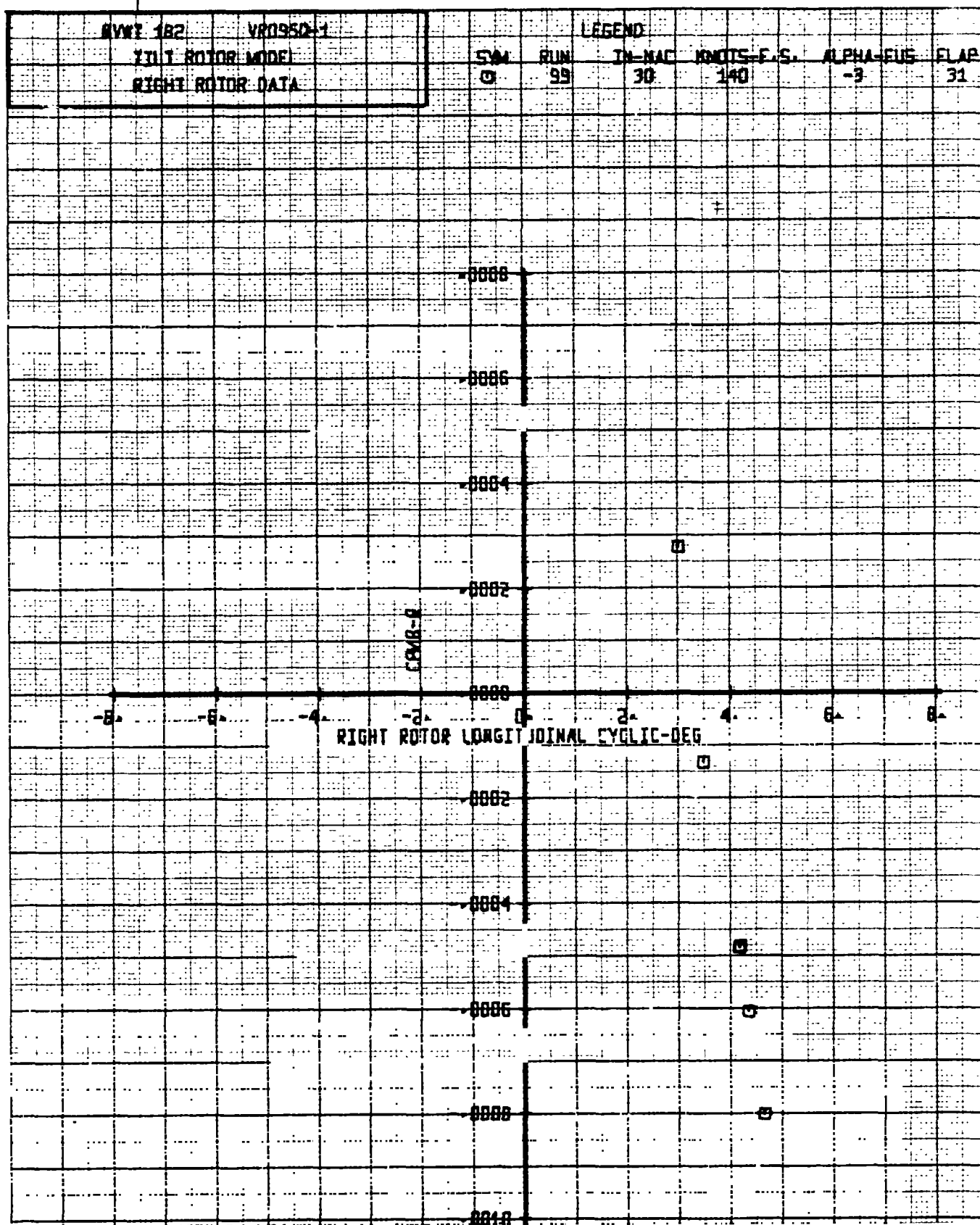
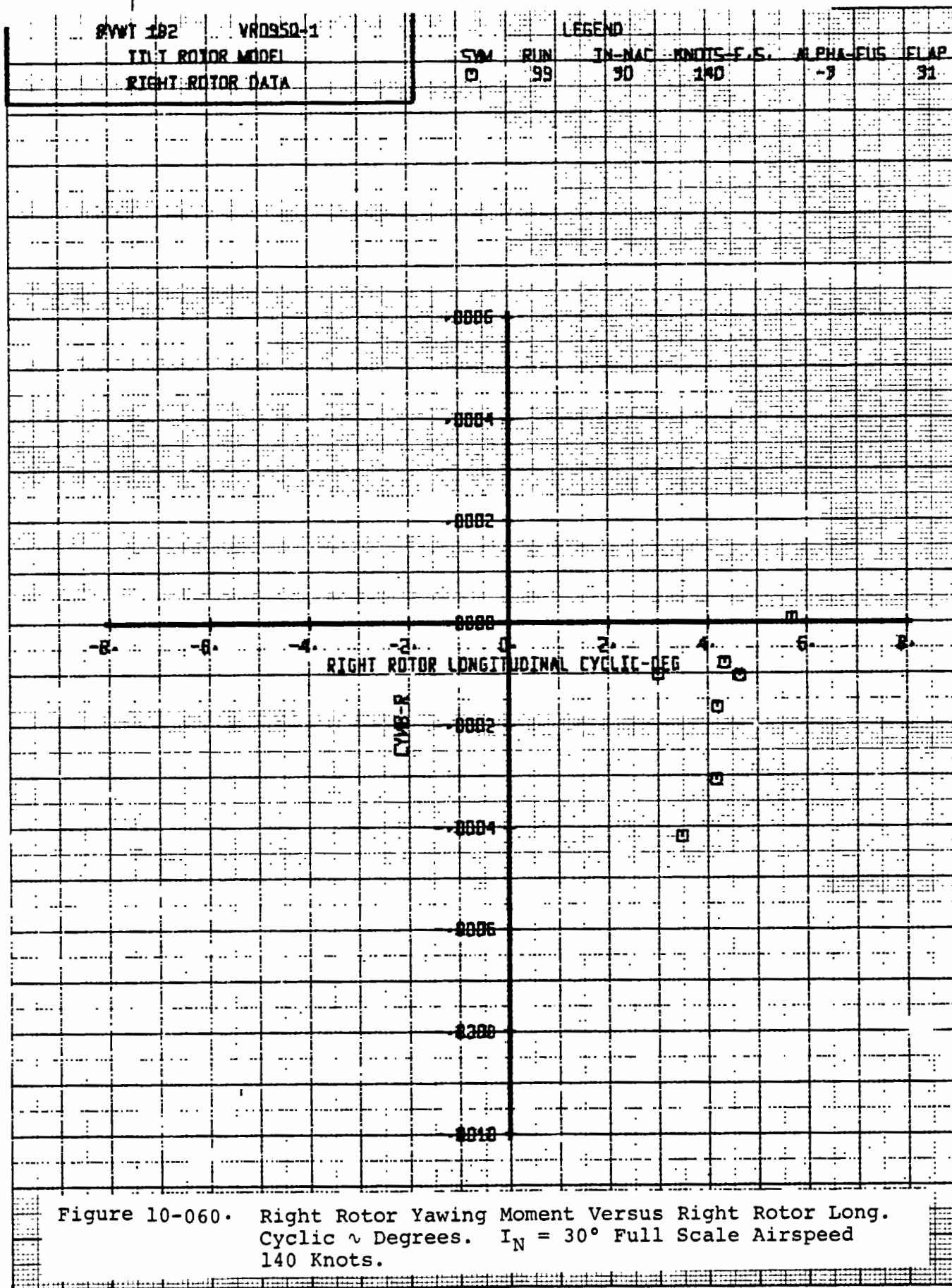
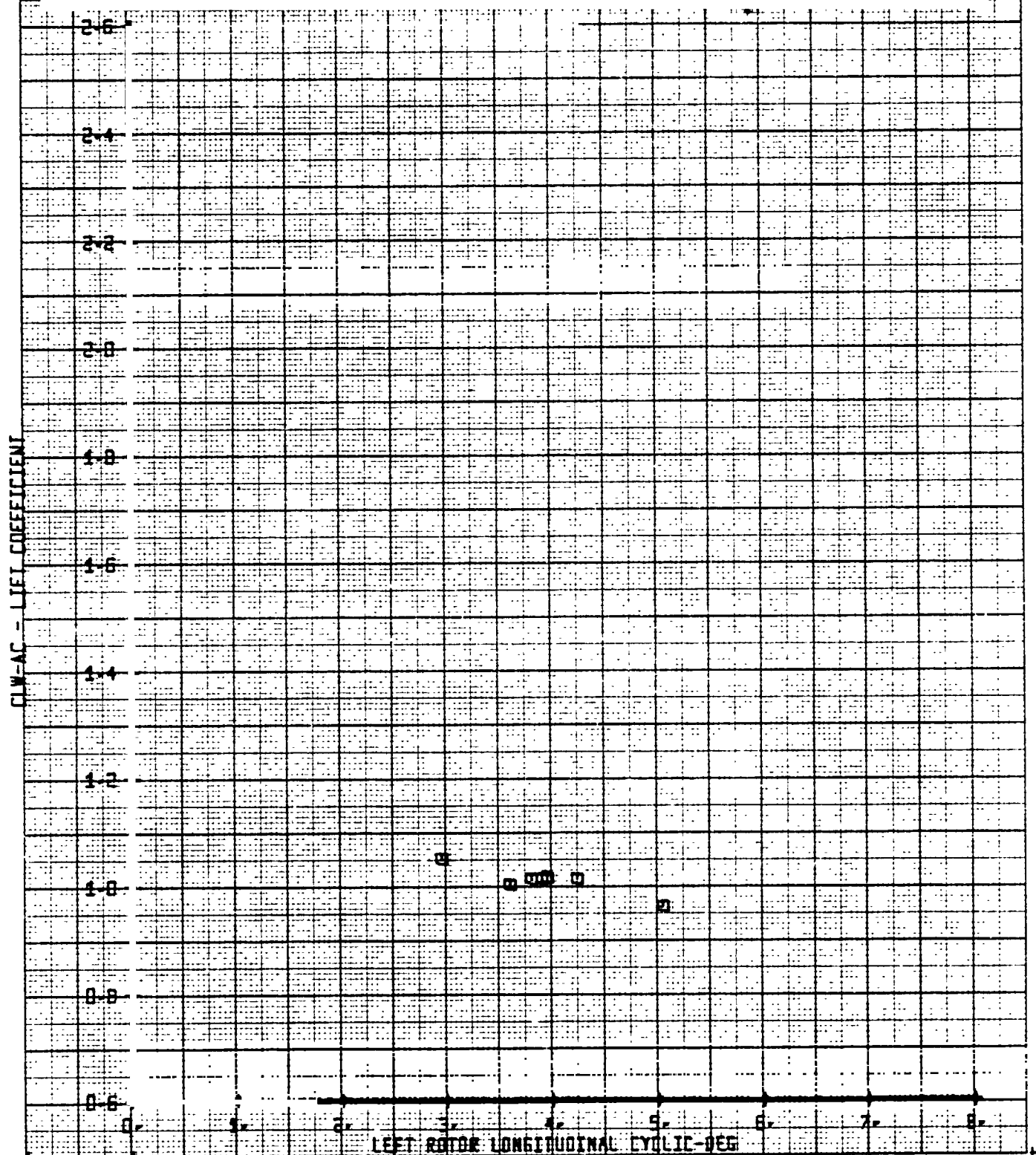


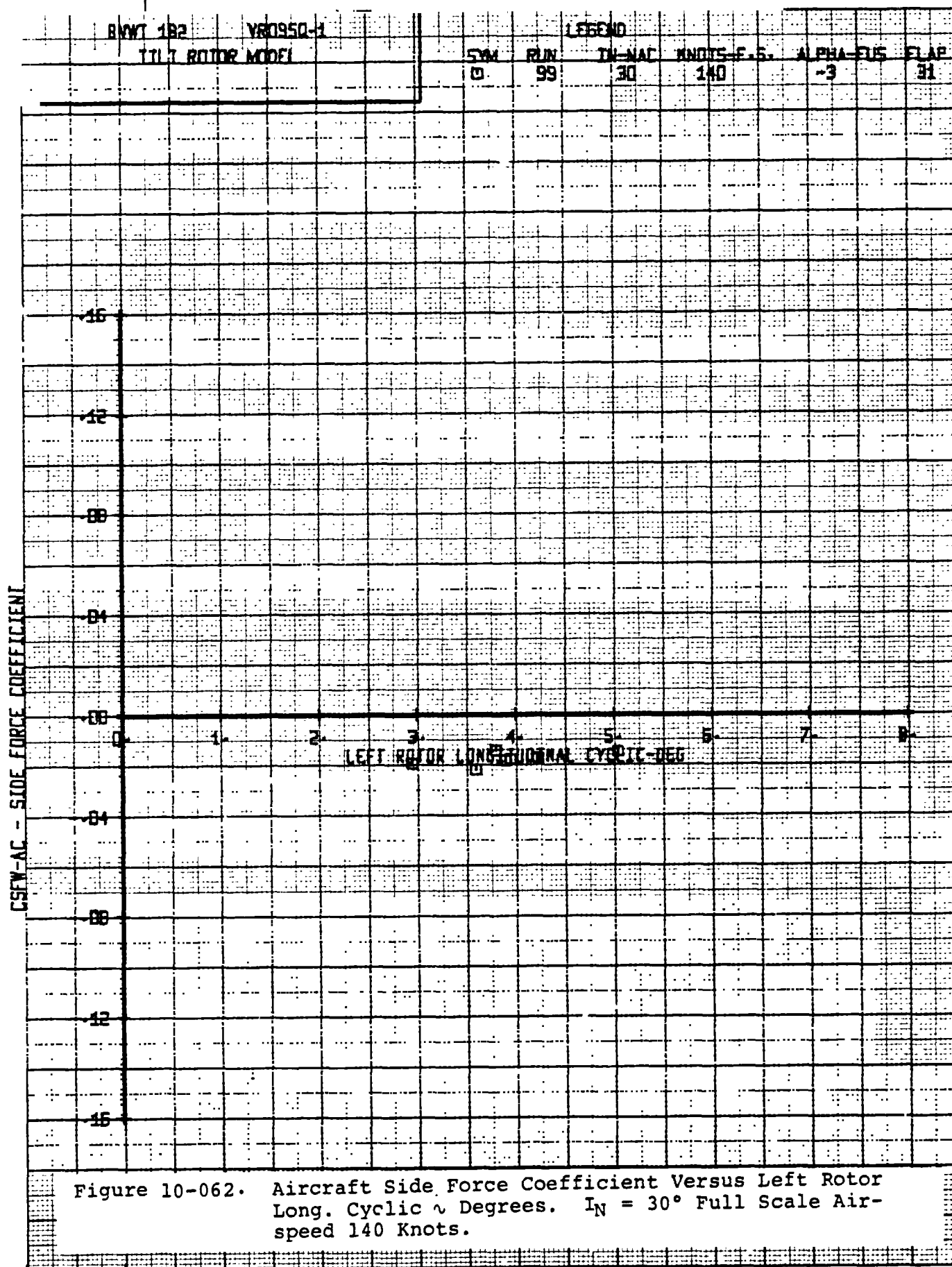
Figure 10-059. Right Rotor Pitching Moment Versus Right Rotor Long. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale
Airspeed 140 Knots.

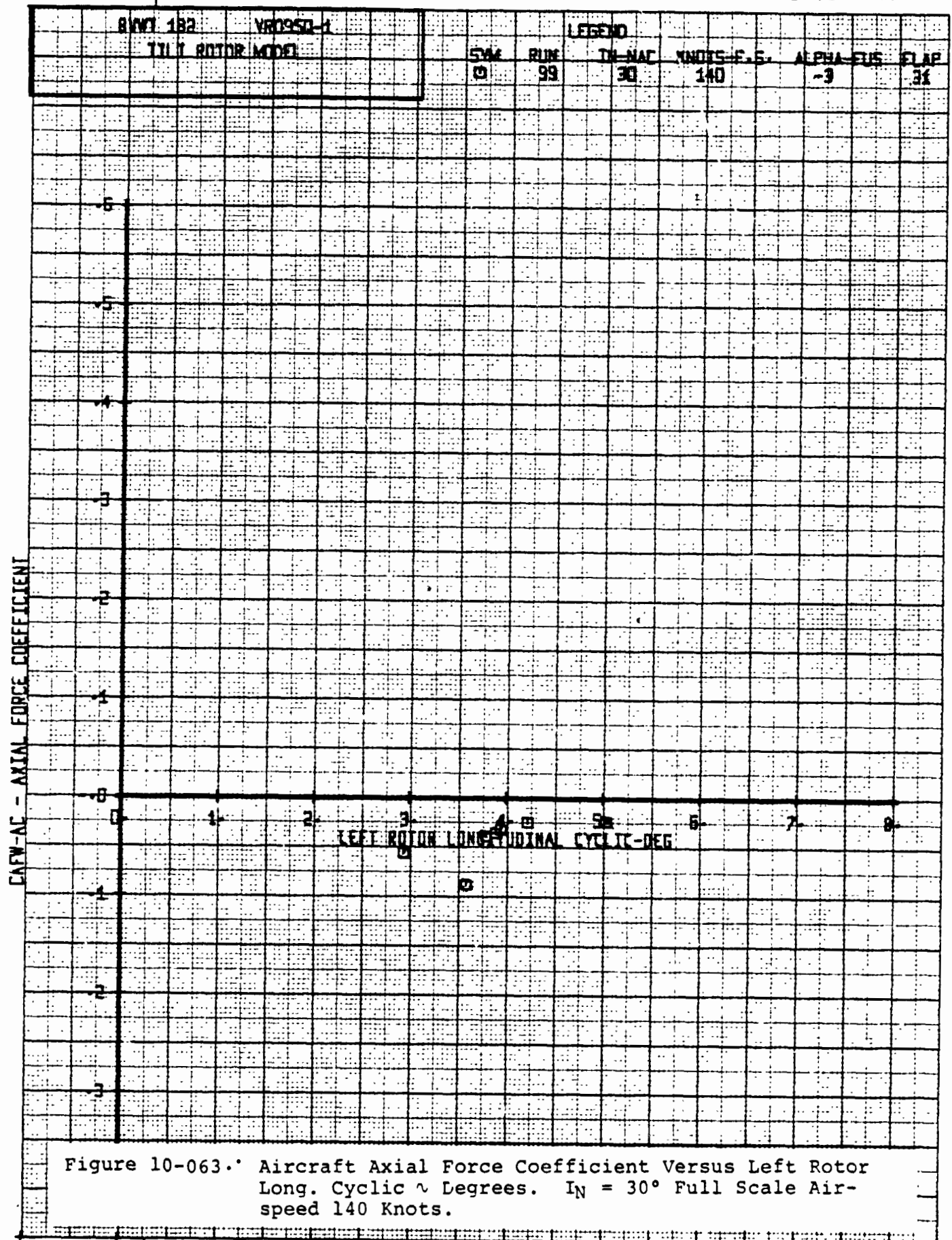


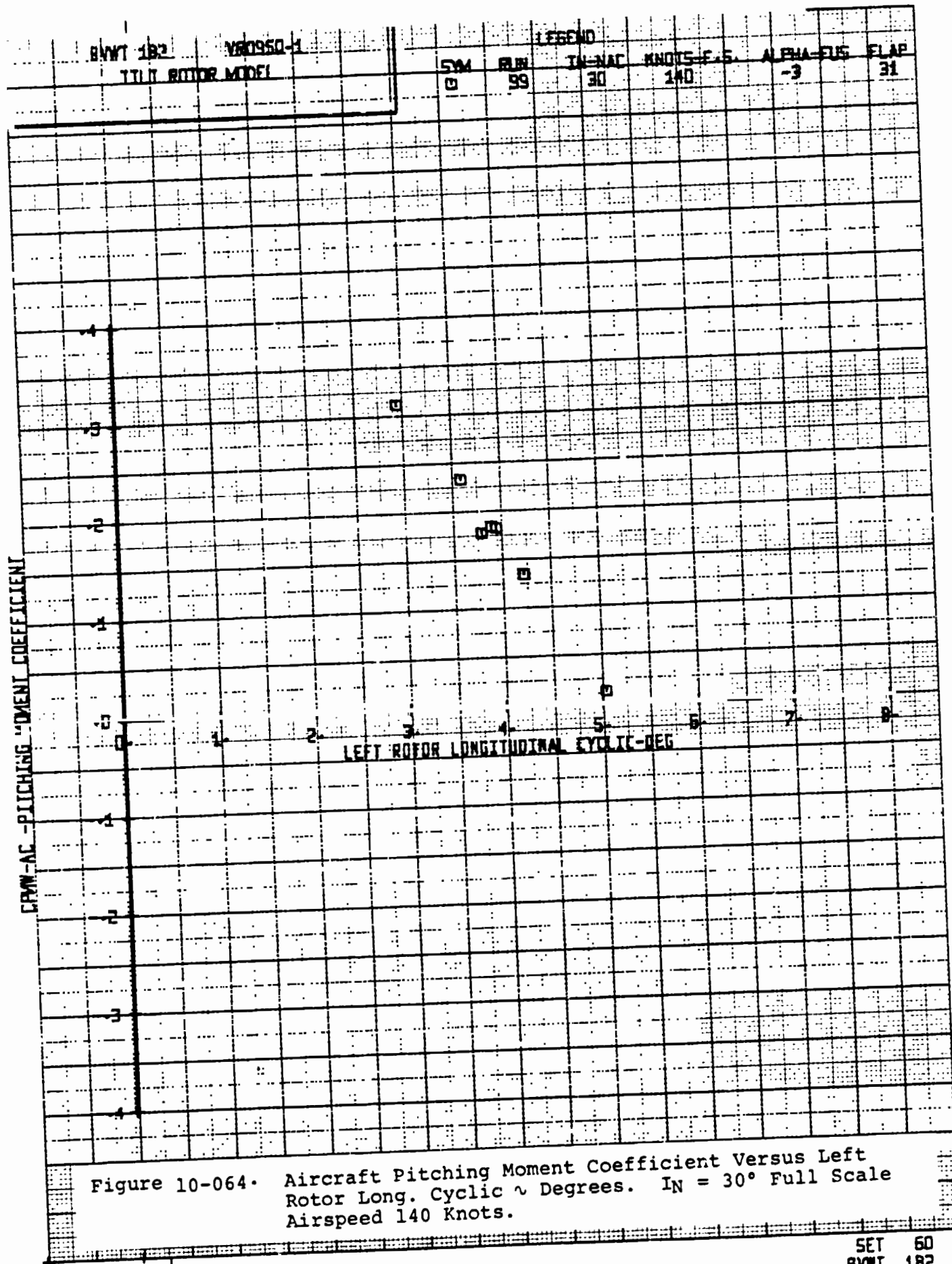
| | | | | | | | |
|------------------|--|----------|-----|--------|------------|-----------|------|
| HWY 182 | | VR0950-1 | | LEGEND | | | |
| TILT ROTOR MODEL | | SW | RUN | IN-MAG | KNOTS-F.S. | ALPHA-FUS | FLAP |
| | | 0 | 99 | 30 | 140 | -3 | 31 |

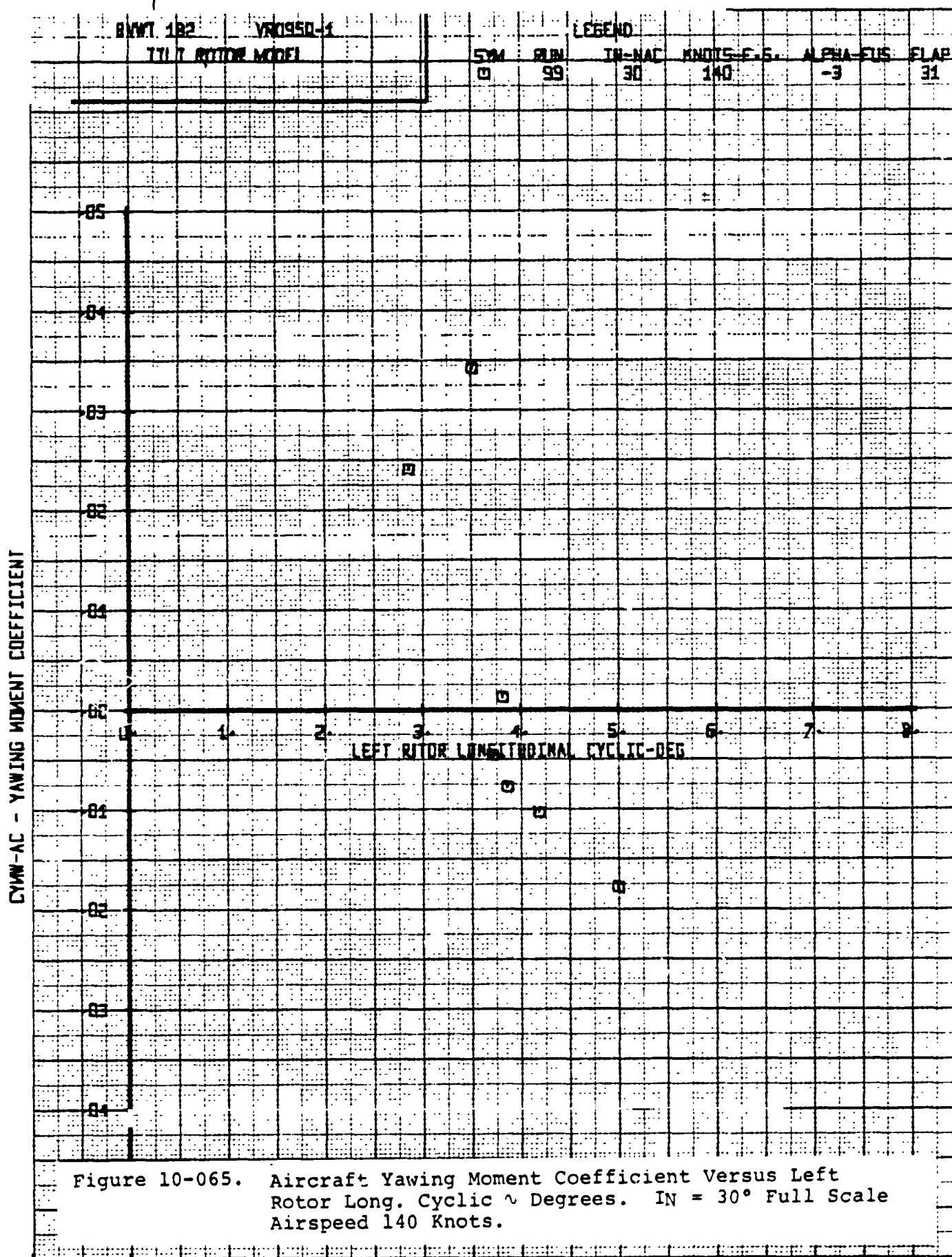
Figure 10-061. Aircraft Lift Coefficient Versus Left Rotor Long. Cyclic α Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.

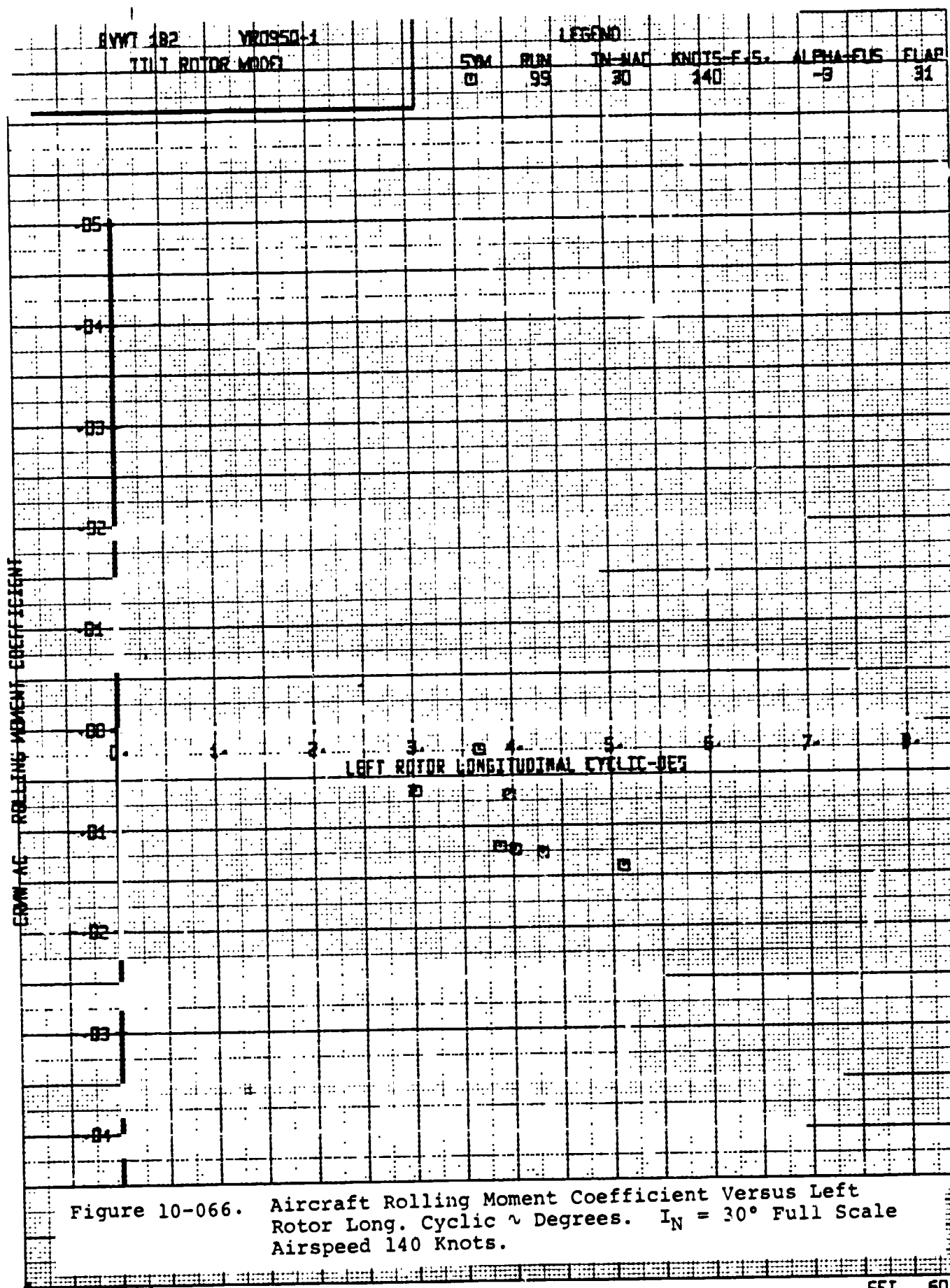


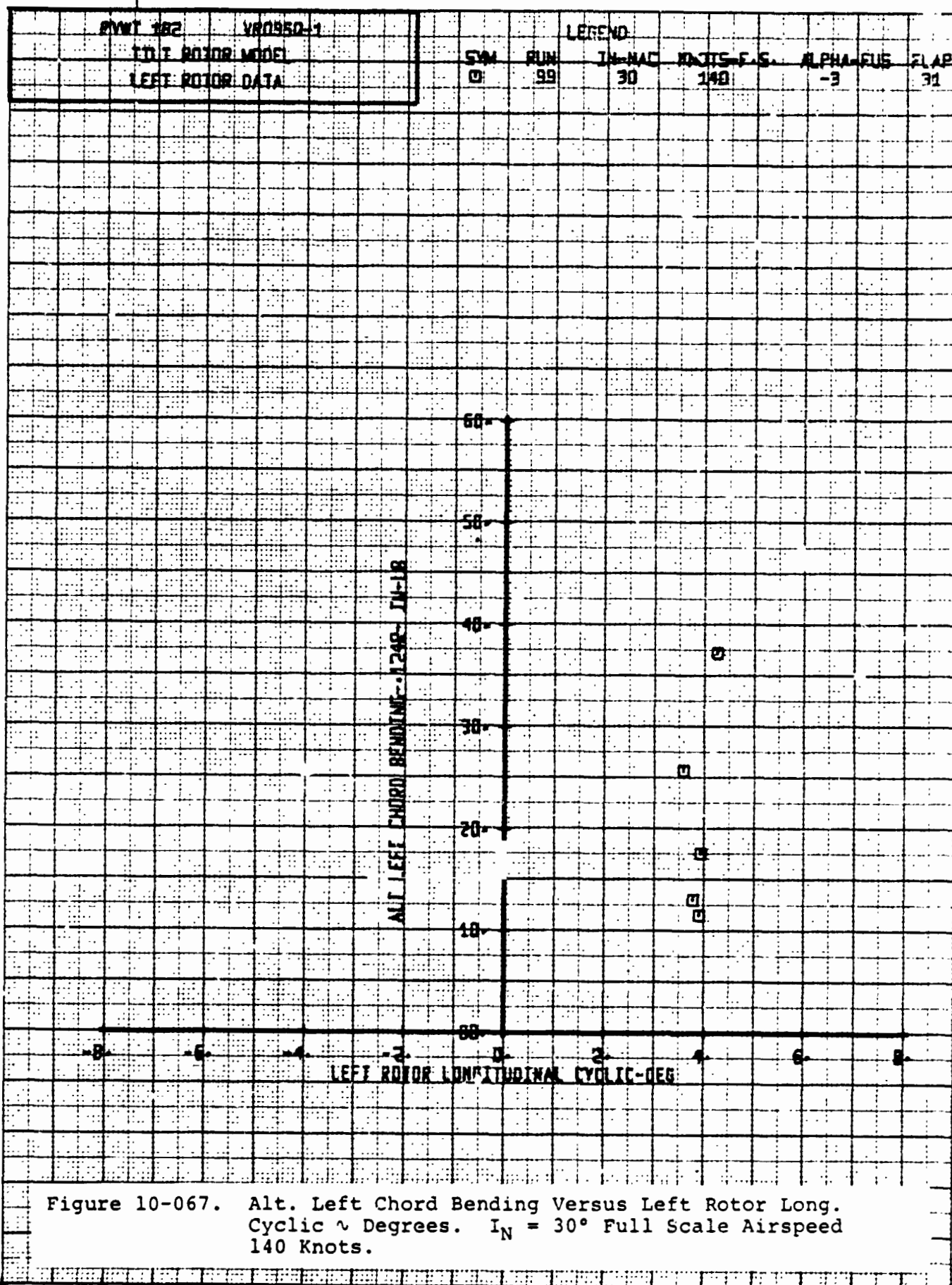












BVWT 182 VR0950-1

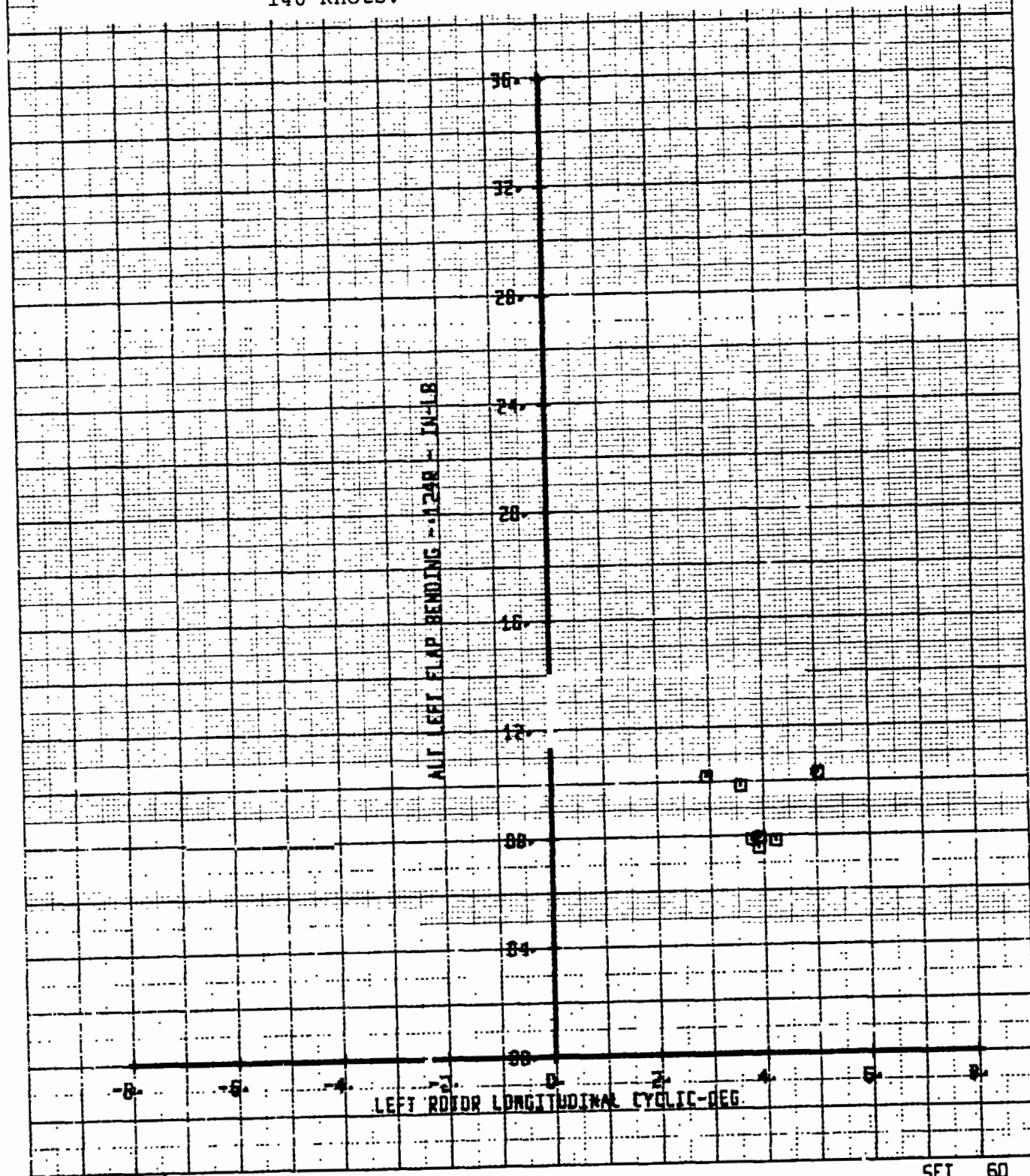
LEFT ROTOR LONG.

LEFT ROTOR DATA

LEGEND

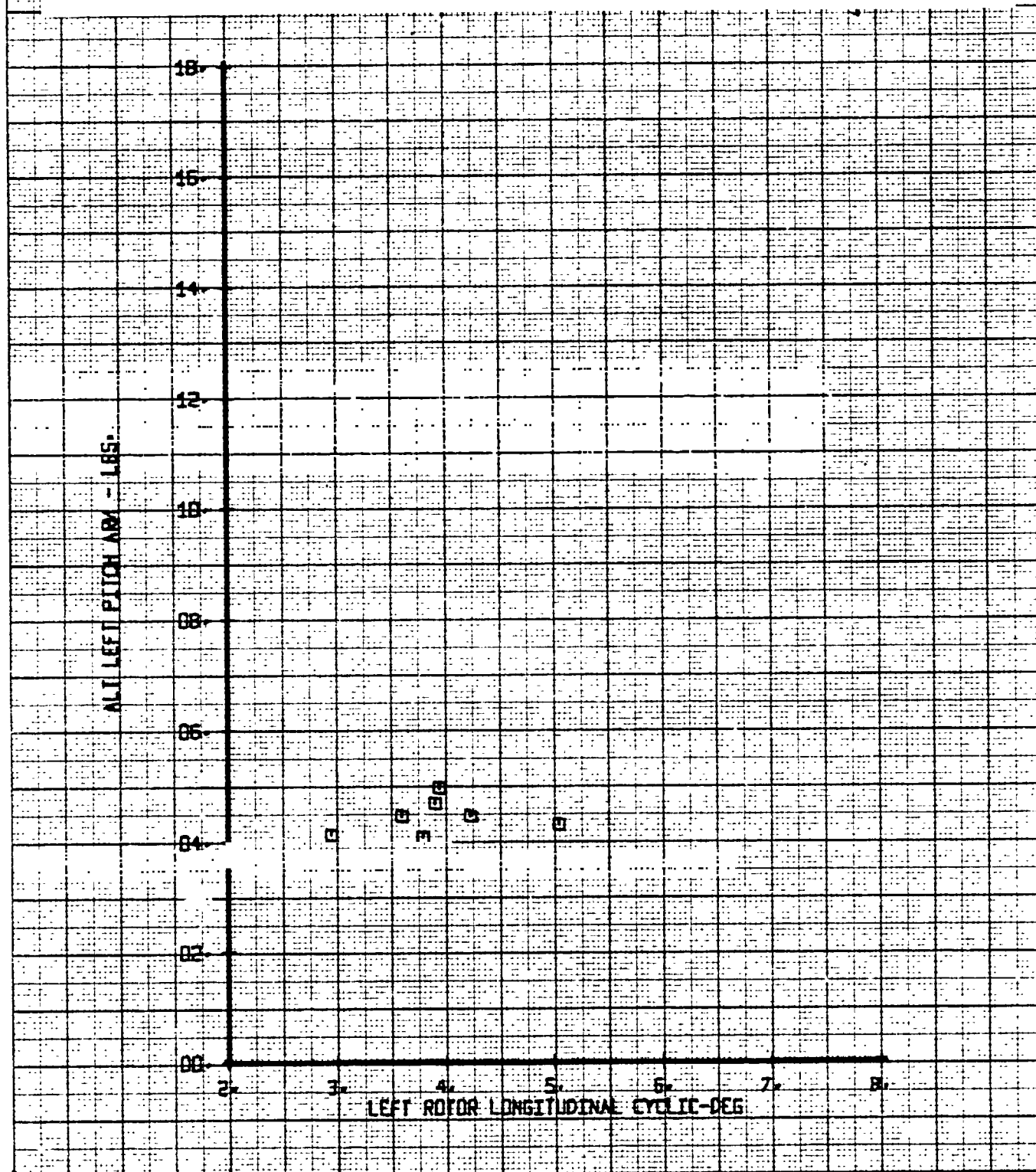
SYM
□RUN
99IN-NAE
30KNOTS-F.S.
140ALPHA-FUS
-3FLAP
31

Figure 10-068. Alt. Left Flap Bending Versus Left Rotor Long.
Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed
140 Knots.



| | | | | | | | |
|------------------|----------|-----|-----|--------|------------|-----------|------|
| BVWT 182 | VR0950-1 | SYM | FLN | IN-MAC | INDIS-F.S. | ALPHA-FUS | FLAP |
| LEFT ROTOR MODEL | | 99 | 30 | 140 | -3 | 31 | |
| LEFT ROTOR DATA | | | | | | | |

Figure 10-069. Alt. Left Pitch Link Load Versus Left Rotor Long. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.



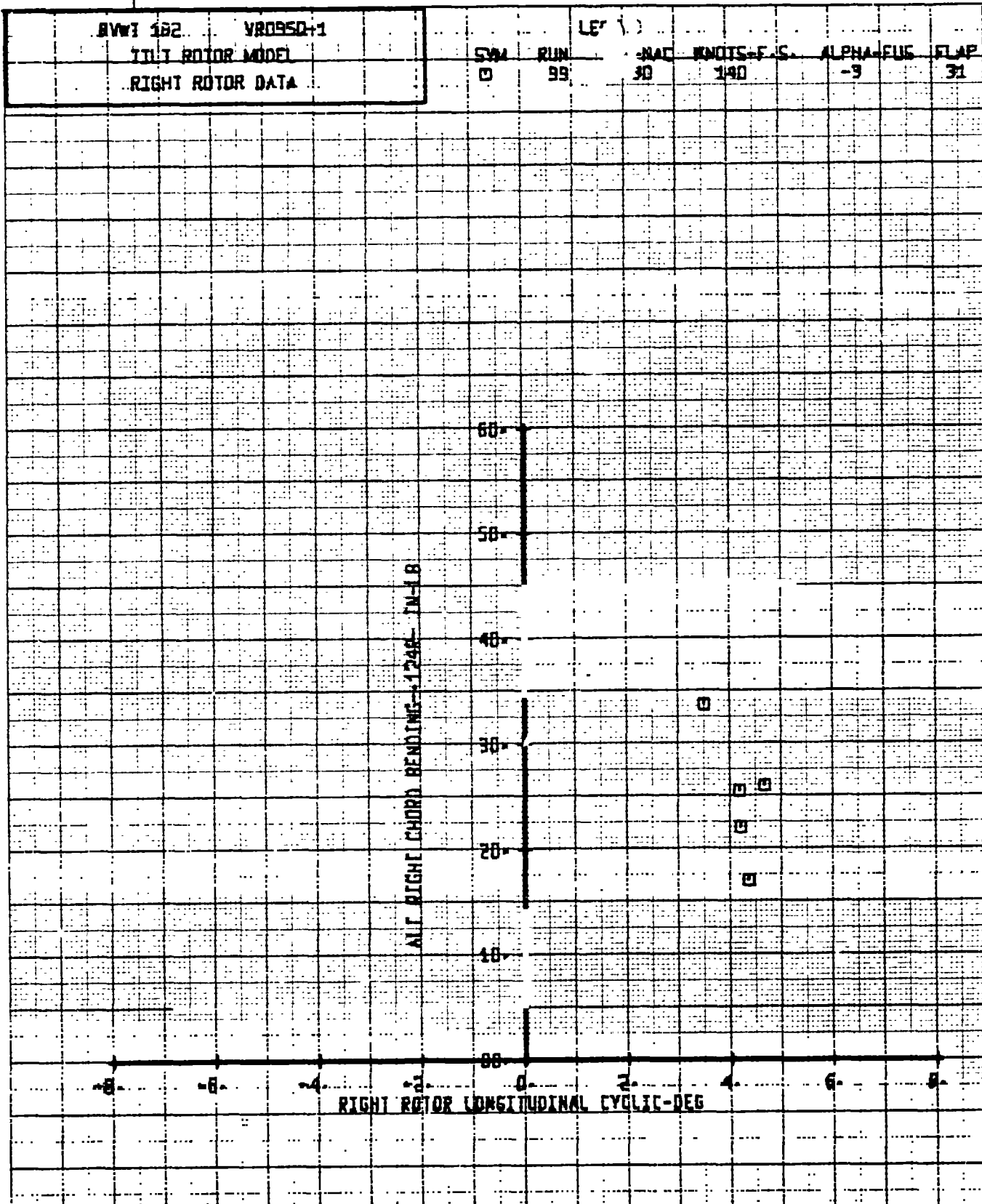
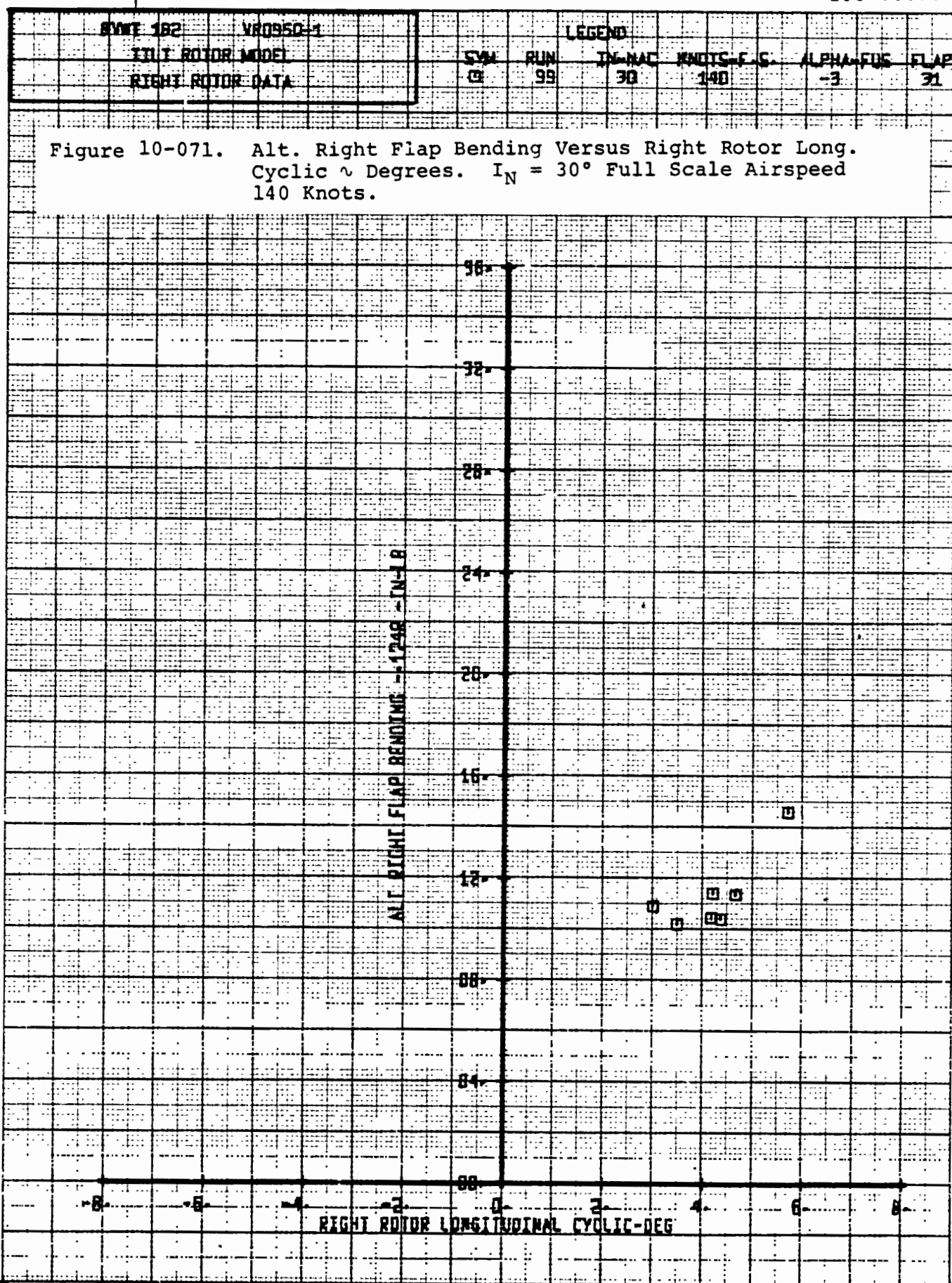
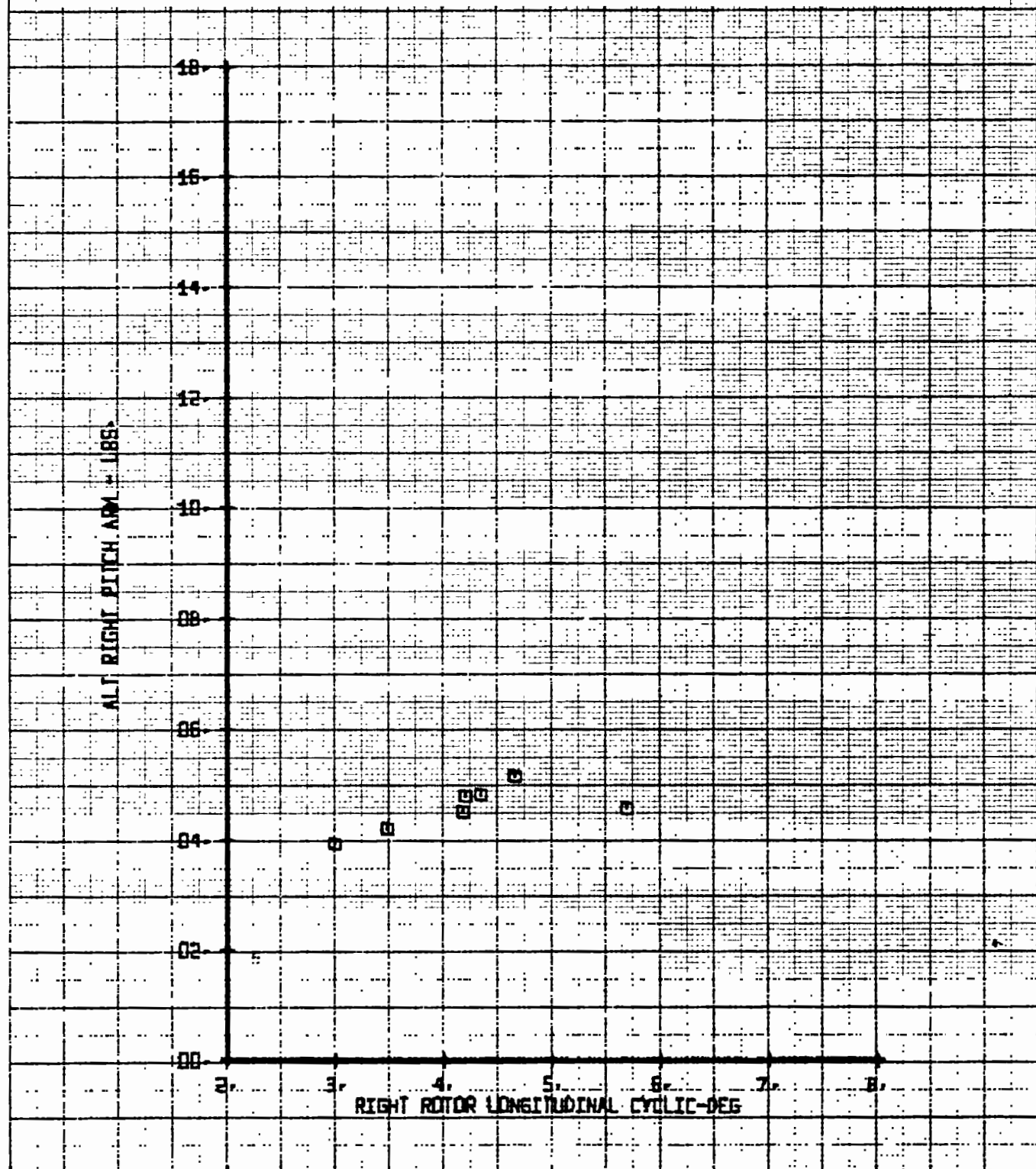


Figure 10-070. Alt. Right Chord Bending Versus Right Rotor Long. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.



| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BYWT 182 | VR0950-1 | LEGEND | | | | |
| TILT ROTOR MODEL | | SYM | RLN | IN-NAC | KNOTS-F.S. | ALPHA-FUS |
| RIGHT ROTOR DATA | | 0 | 99 | 90 | 140 | -3 |
| | | | | | | FLAP 31 |

Figure 10-072. Alt. Right Pitch Link Load Versus Right Rotor Long. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.



Graph showing CTB-L Thrust Coefficient (Y-axis) versus Left Rotor Lateral Cyclic-Deg (X-axis). The Y-axis ranges from 0.000 to 0.020. The X-axis ranges from -6 to 6. Data points are plotted at approximately (3.5, 0.0018), (4.5, 0.0022), (5.5, 0.0018), and (6.5, 0.0018).

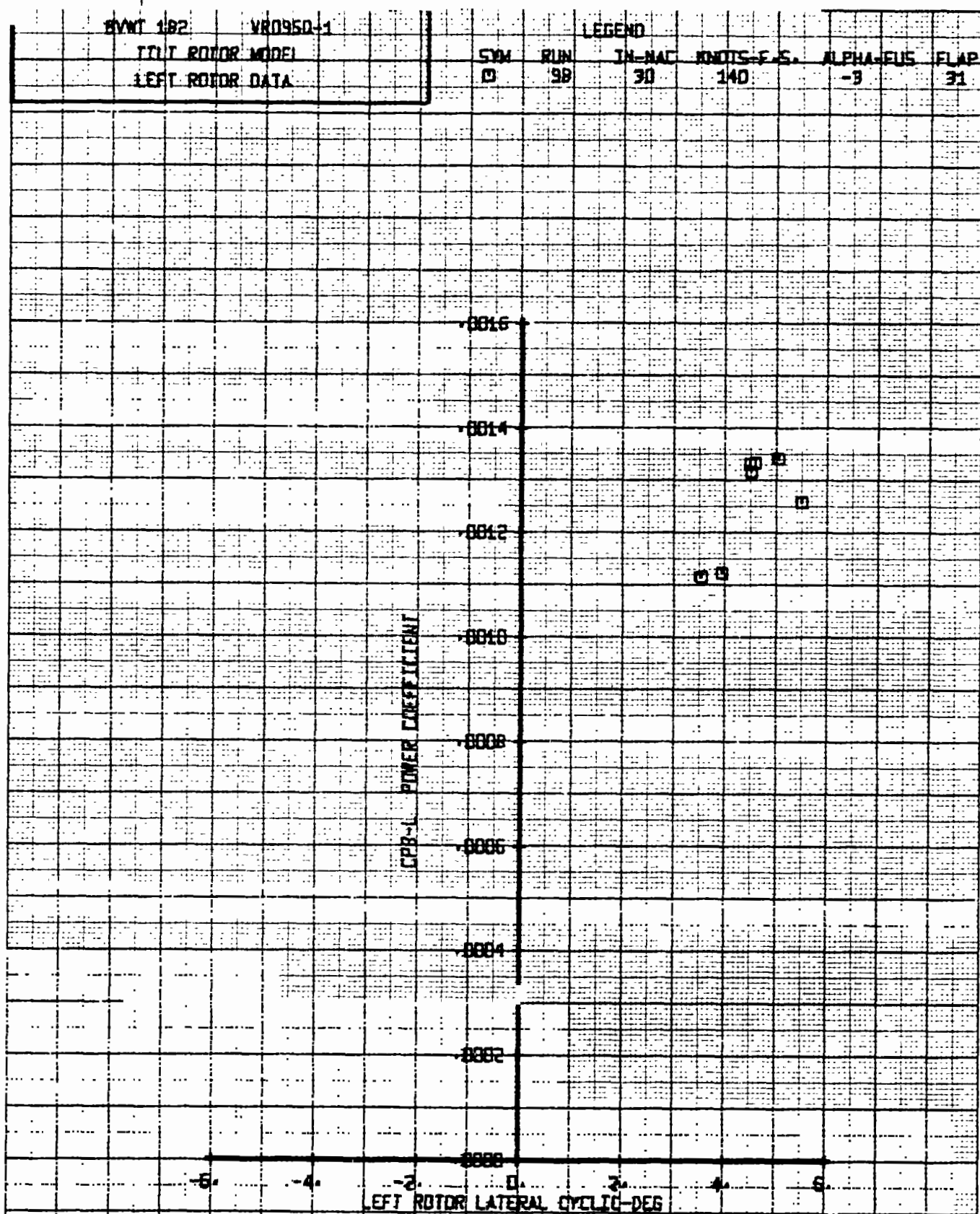


Figure 10-074. Left Rotor Power Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.

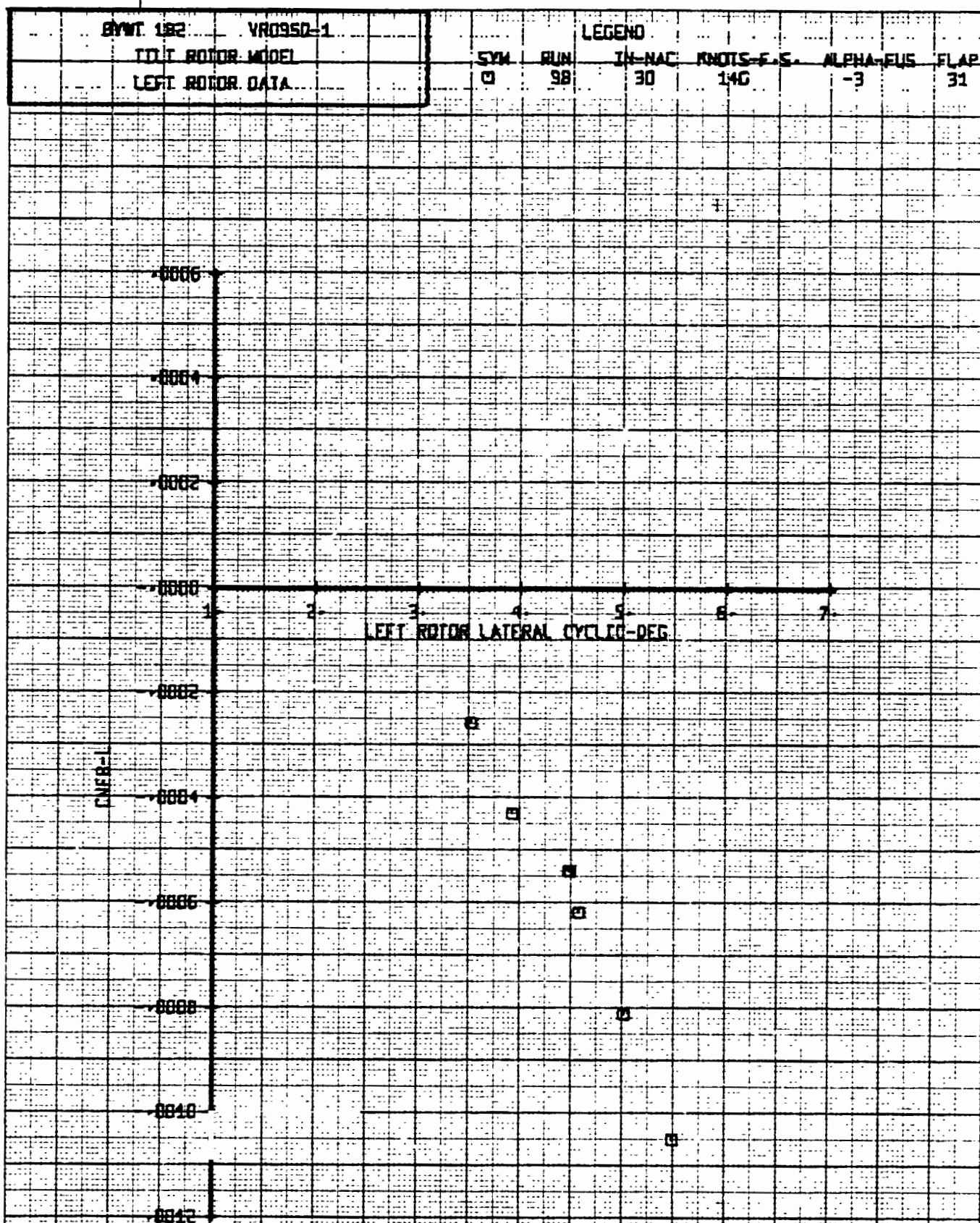
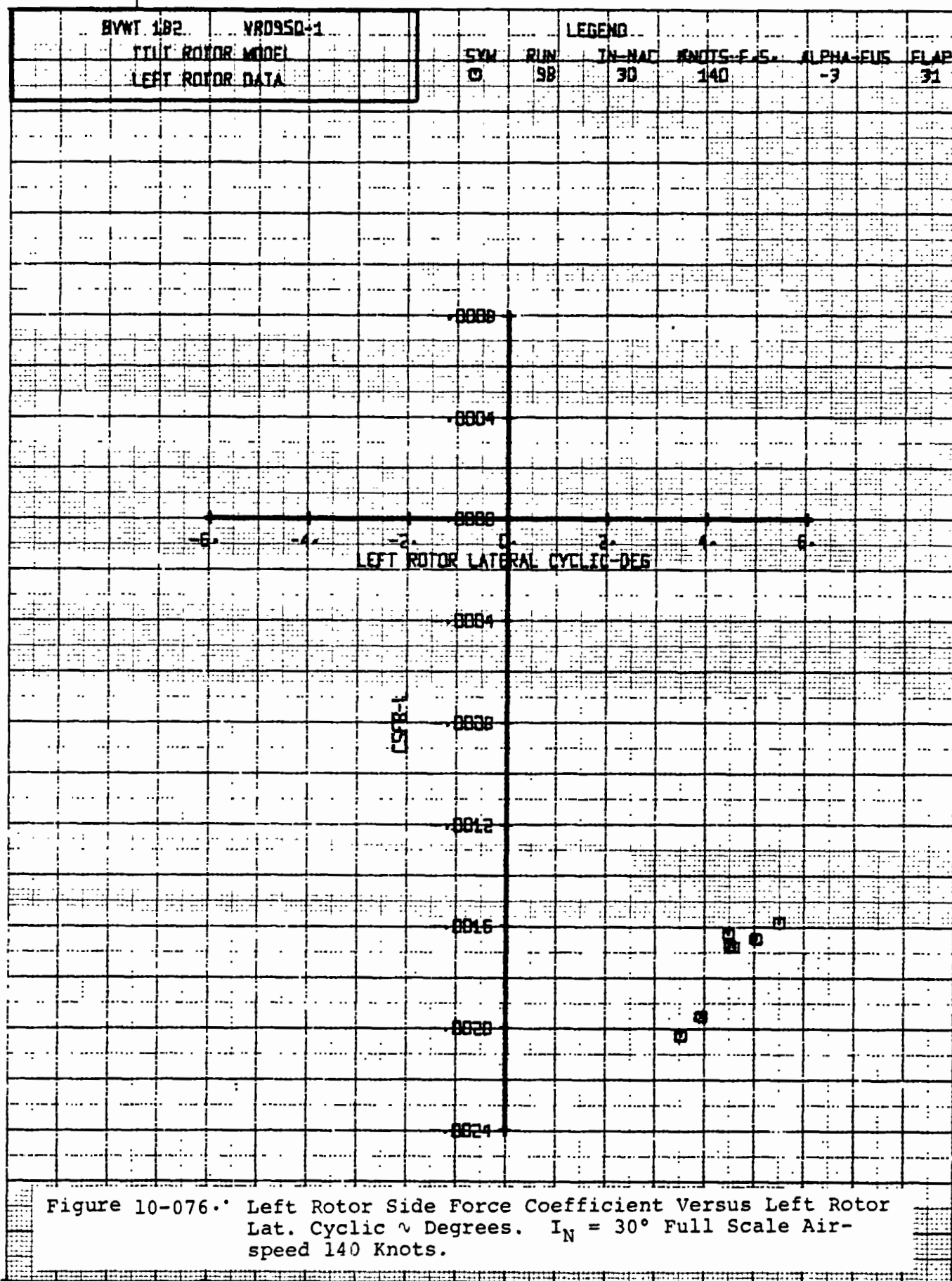


Figure 10-075. Left Rotor Normal Force Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.



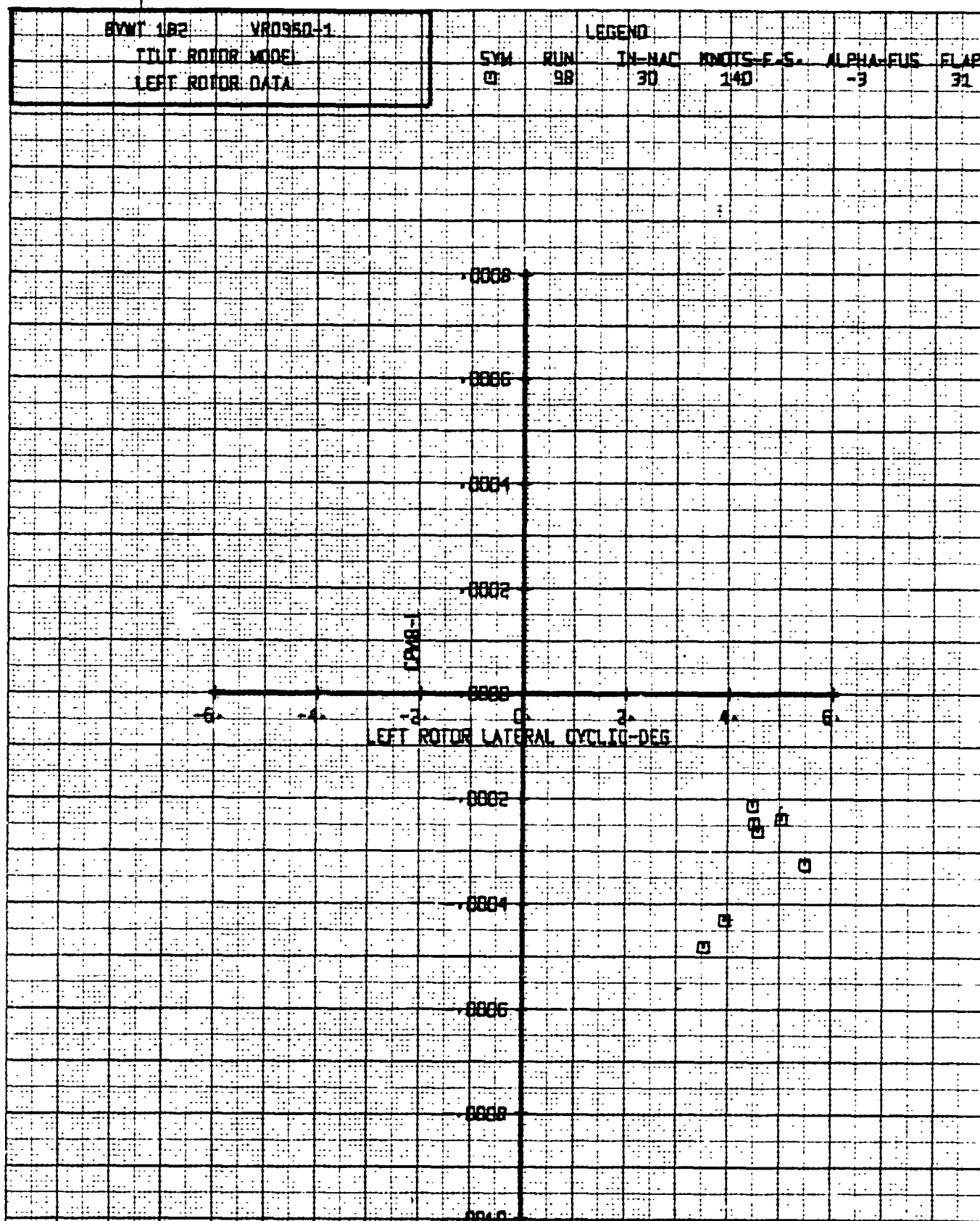


Figure 10-077. Left Rotor Pitching Moment Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.

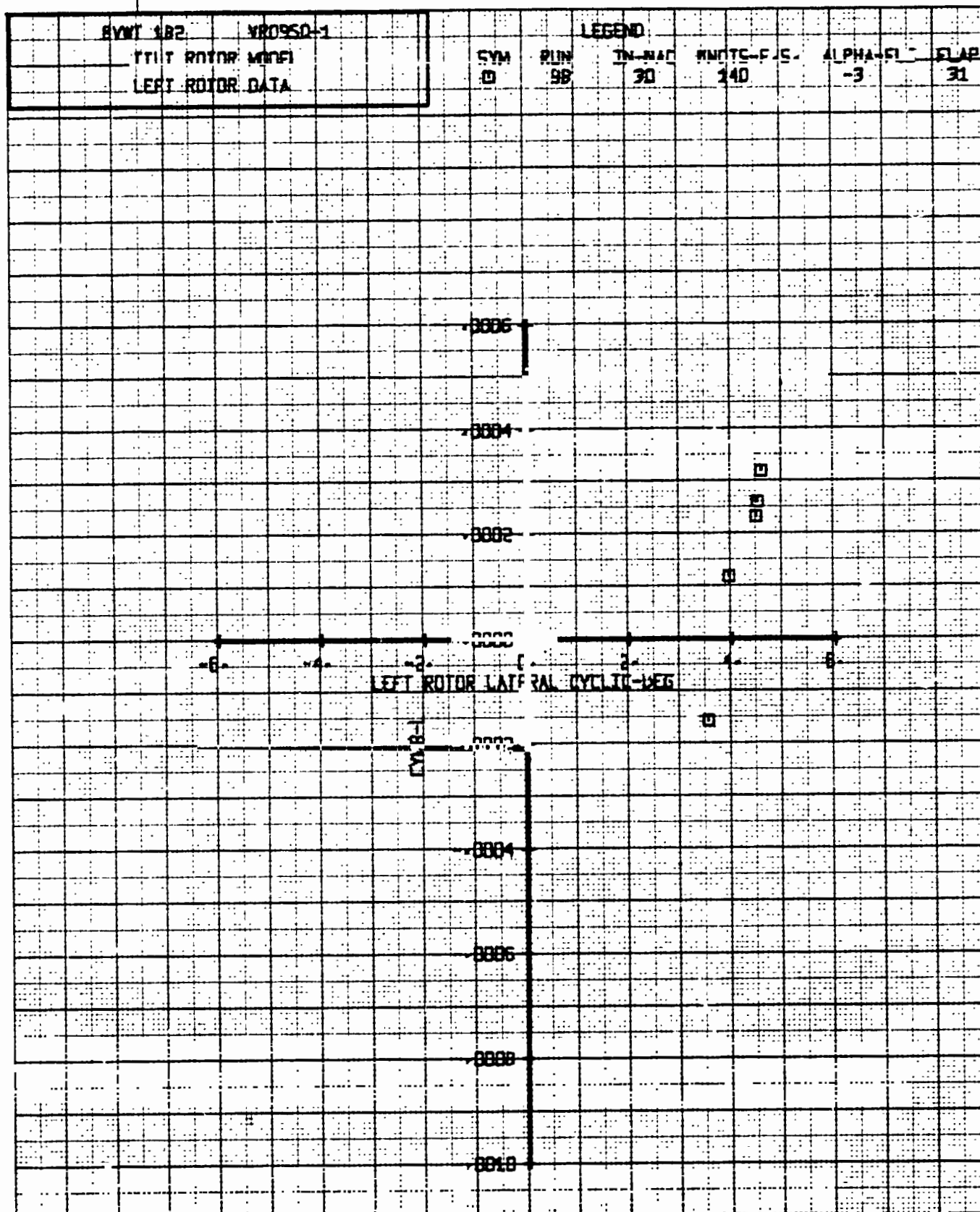
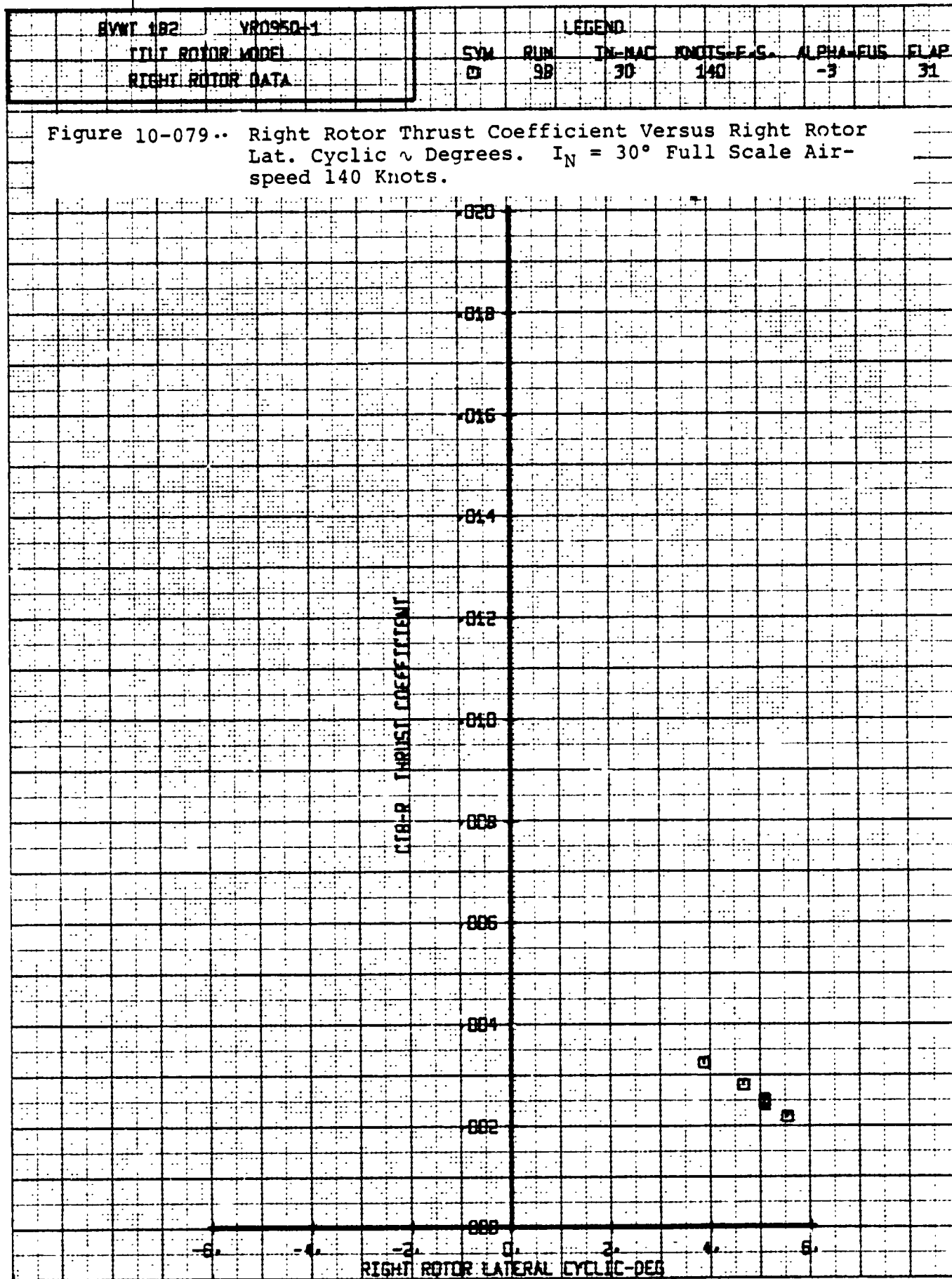


Figure 10-078. Left Rotor Yawing Moment Coefficient Versus Left Rotor Lat. Cyclic \sim Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.



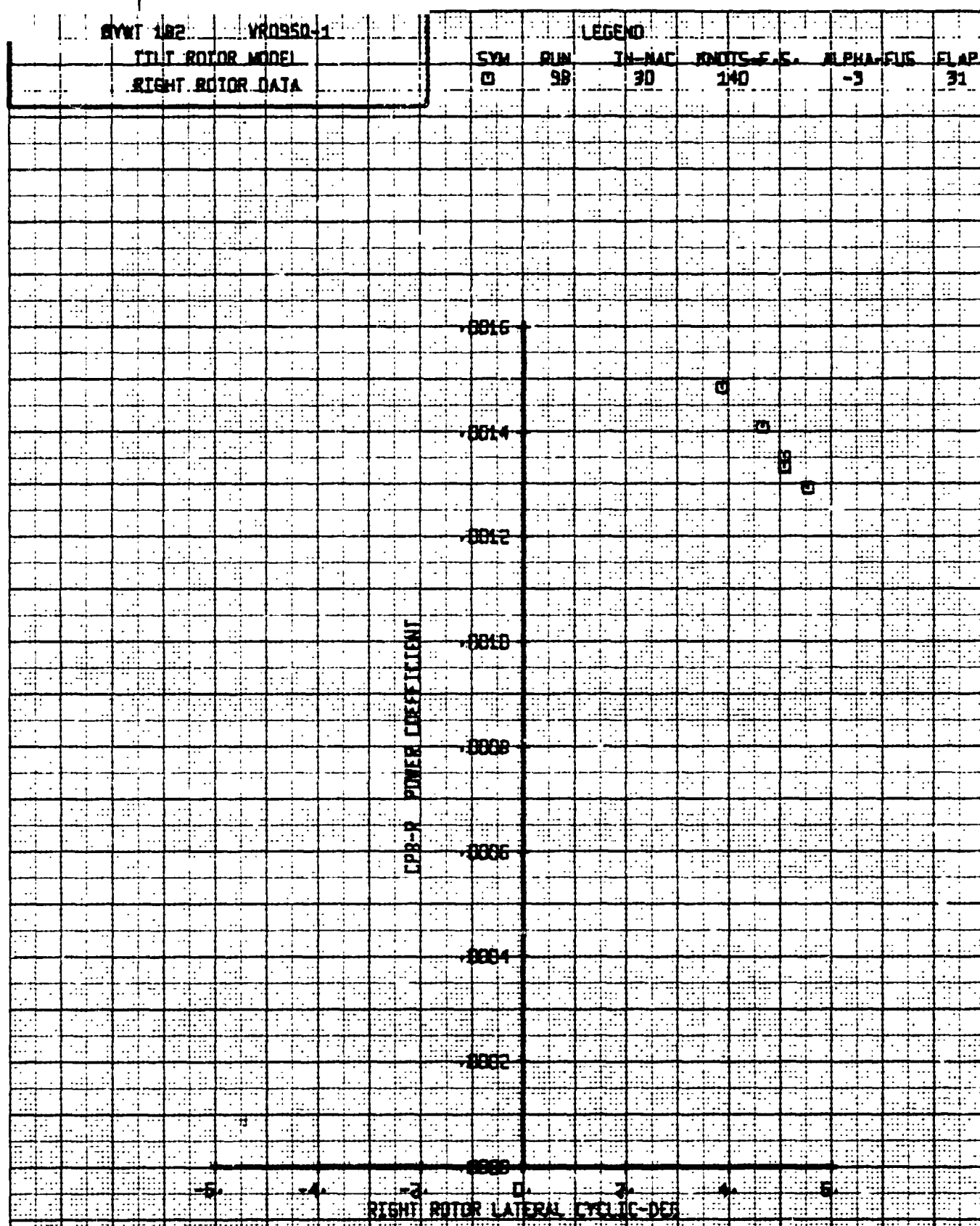
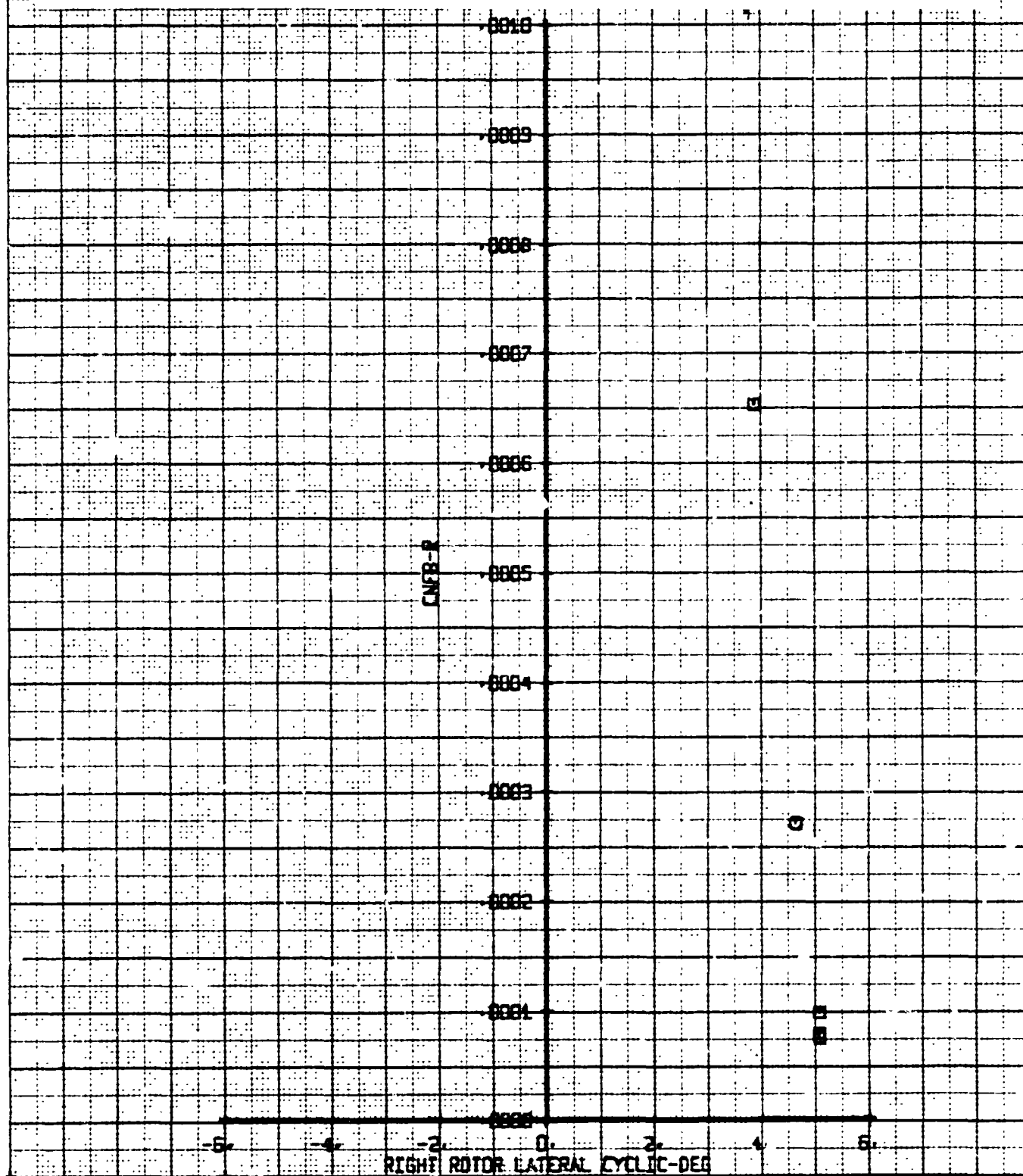


Figure 10-080. Right Rotor Power Coefficient Versus Right Rotor Lat. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale Air-speed 140 Knots.

| | | | | | | | |
|-------------------|----------|--------|-----|--------|------------|-----------|------|
| BYWT 182 | VR0950-1 | LEGEND | | | | | |
| RIGHT ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-DEG | FLAP |
| RIGHT ROTOR DATA | | 0 | 98 | 30 | 140 | -3 | 31 |

Figure 10-081. Right Rotor Normal Force Coefficient Versus Right Rotor Lat. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.



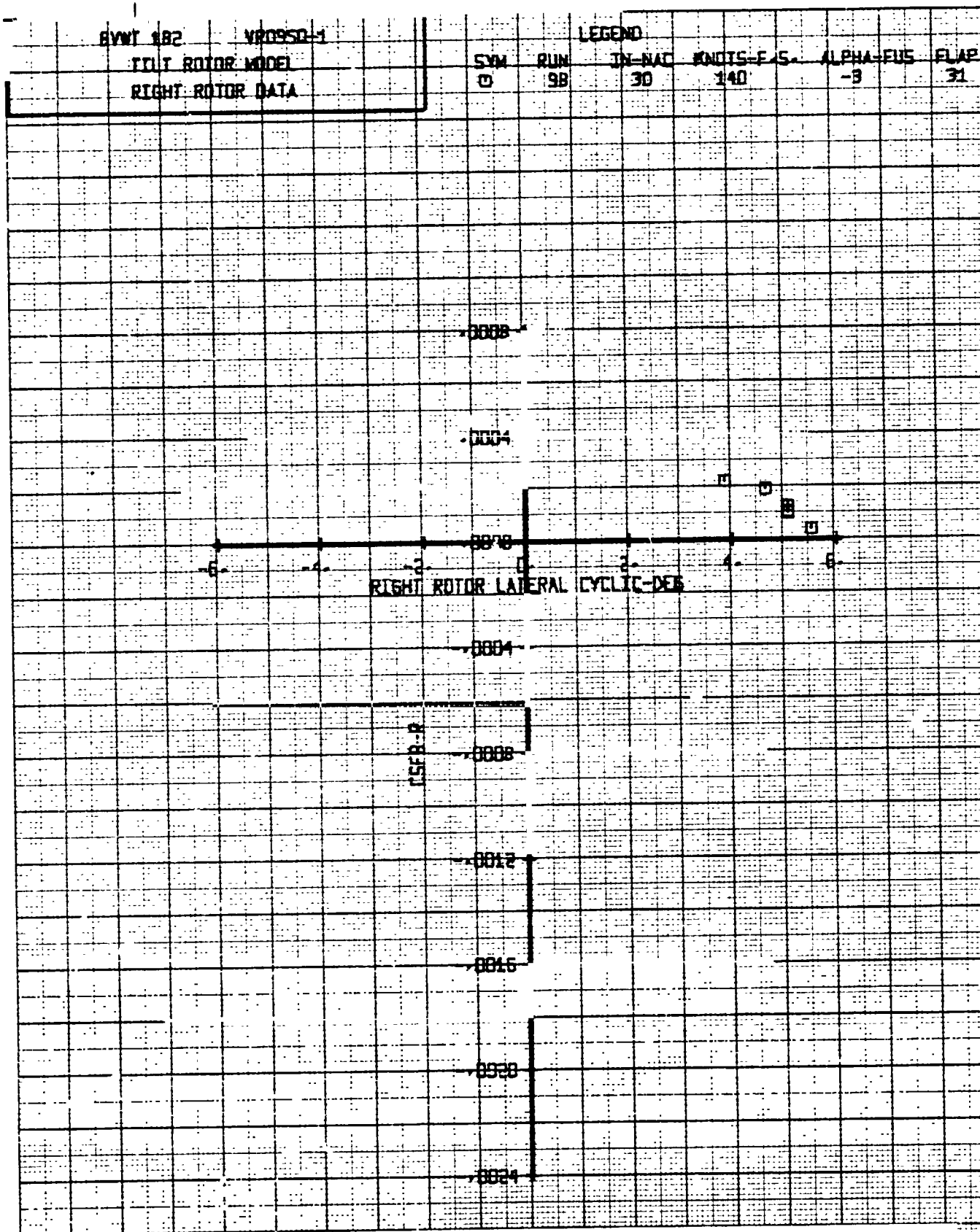
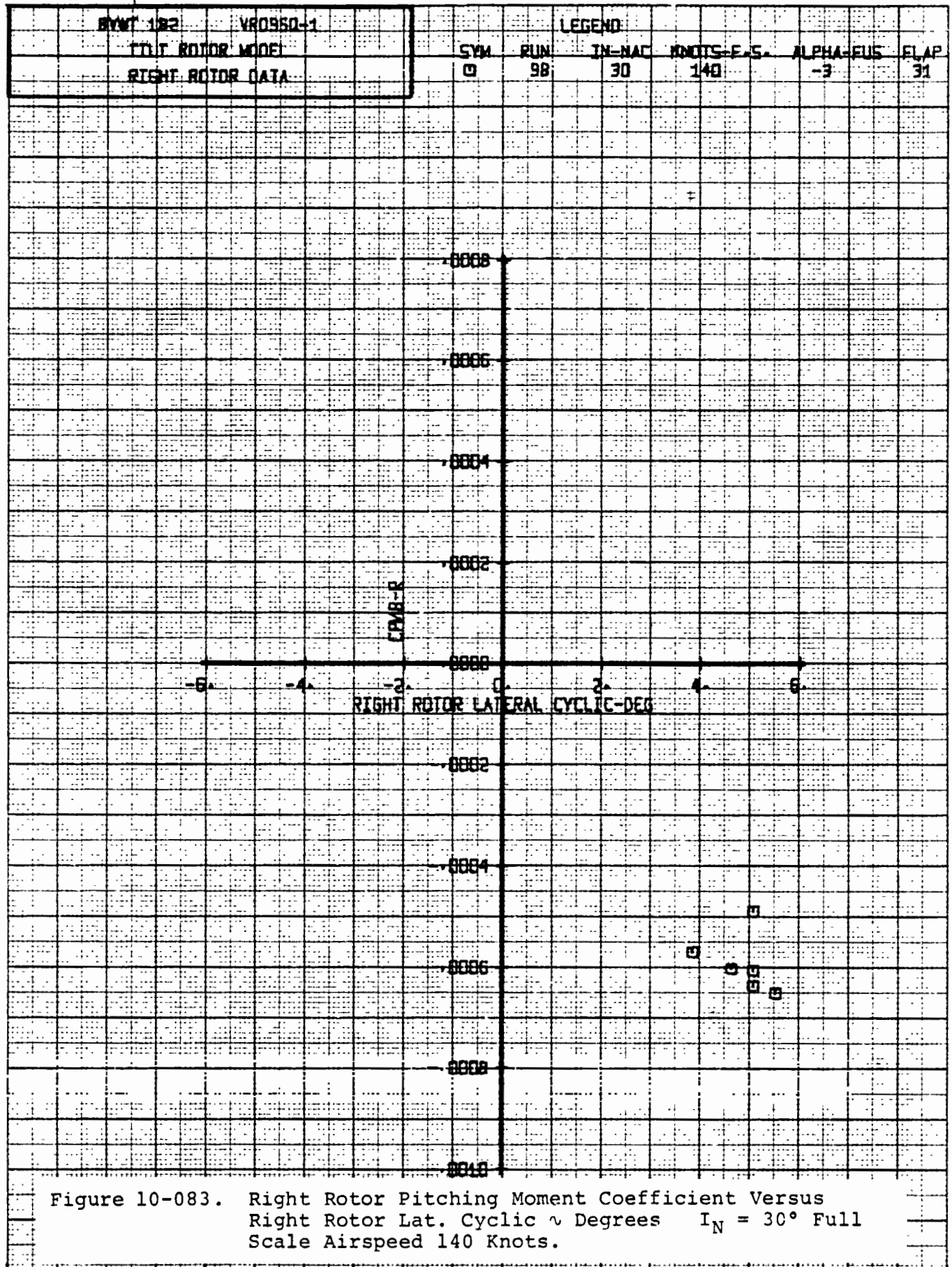
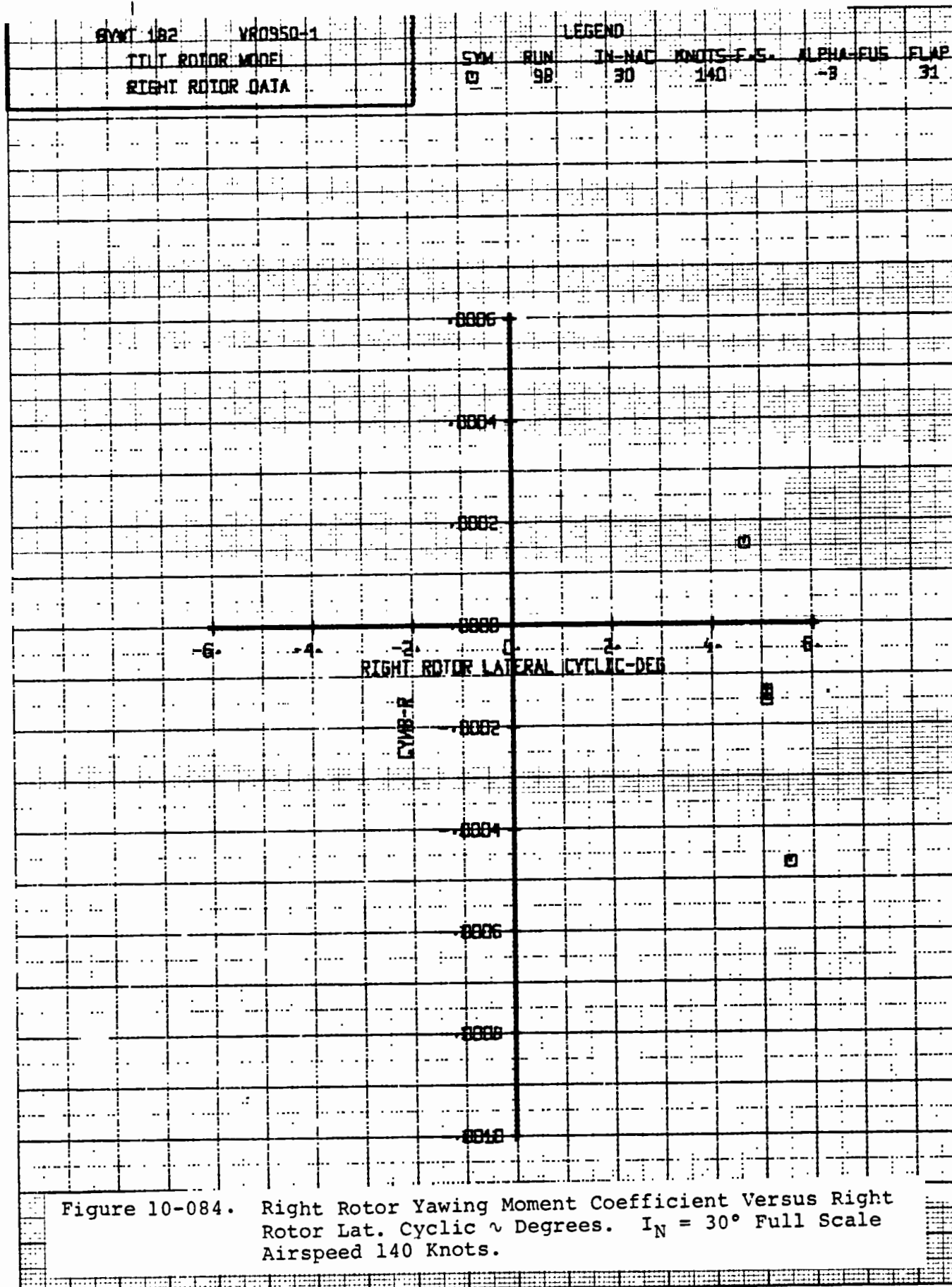


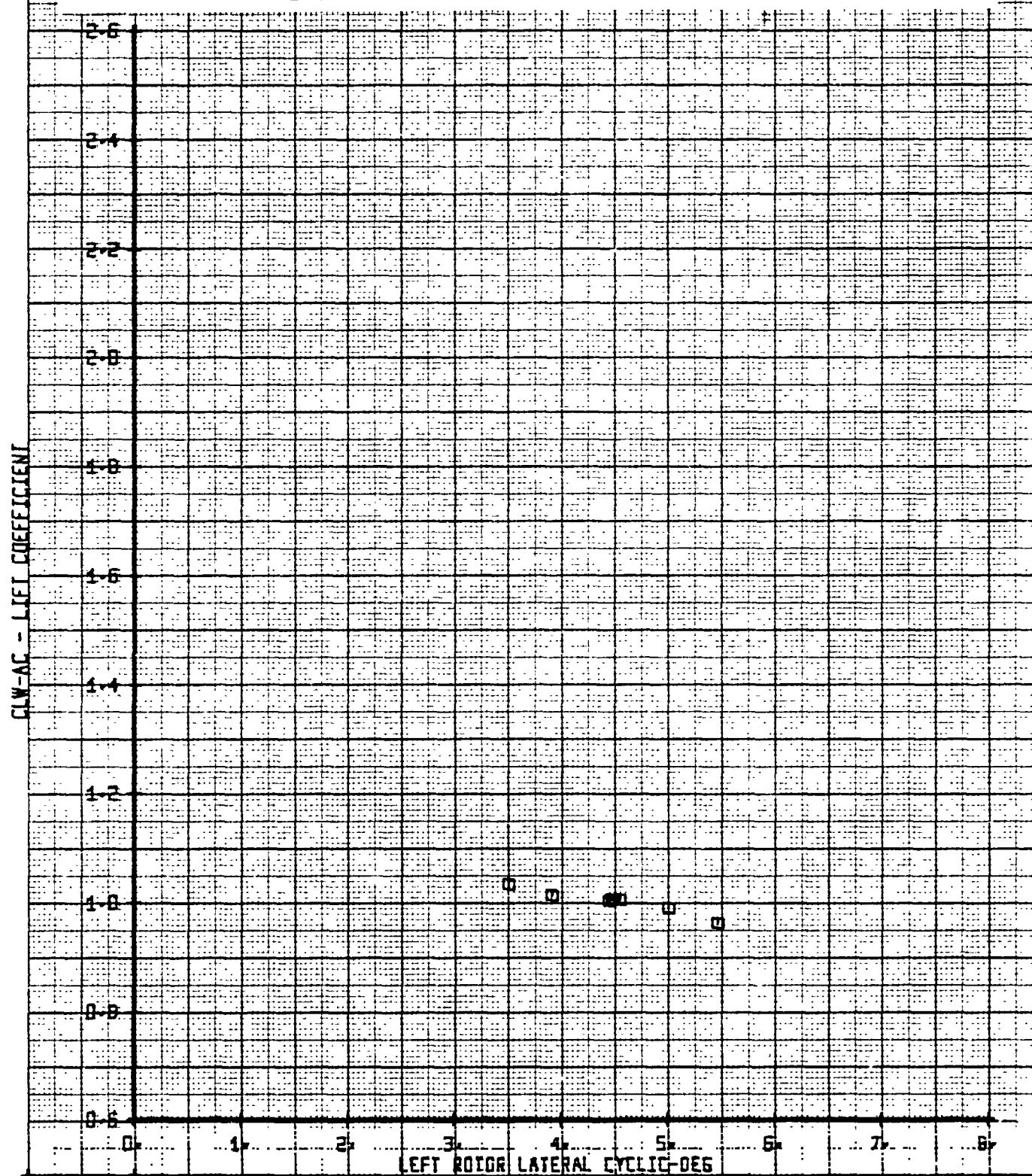
Figure 10-082. Right Rotor Side Force Coefficient Versus Right Rotor Lat. Cyclic α Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.





| BVWT 182 | YK0950-1 | LEGEND | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|------|
| TILT ROTOR MODEL | | SYM | RUN | IN-NAF | KNOTS-F.S. | ALPHA-DEG | FLAP |
| | | □ | 98 | 30 | 140 | -3 | 31 |

Figure 10-085. Aircraft Lift Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.



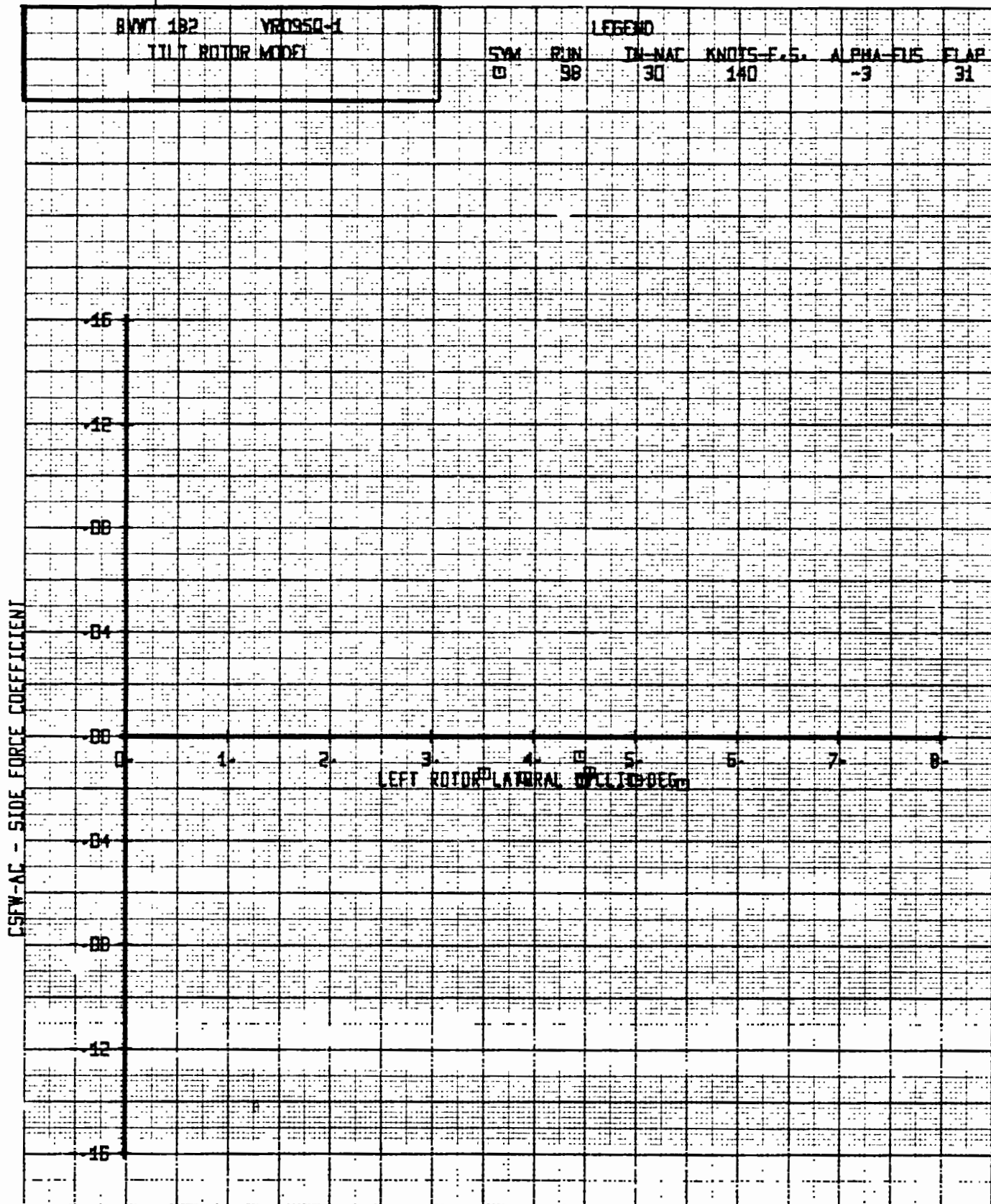


Figure 10-086. Aircraft Side Force Coefficient Versus Left Rotor Lat. Cyclic in Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.

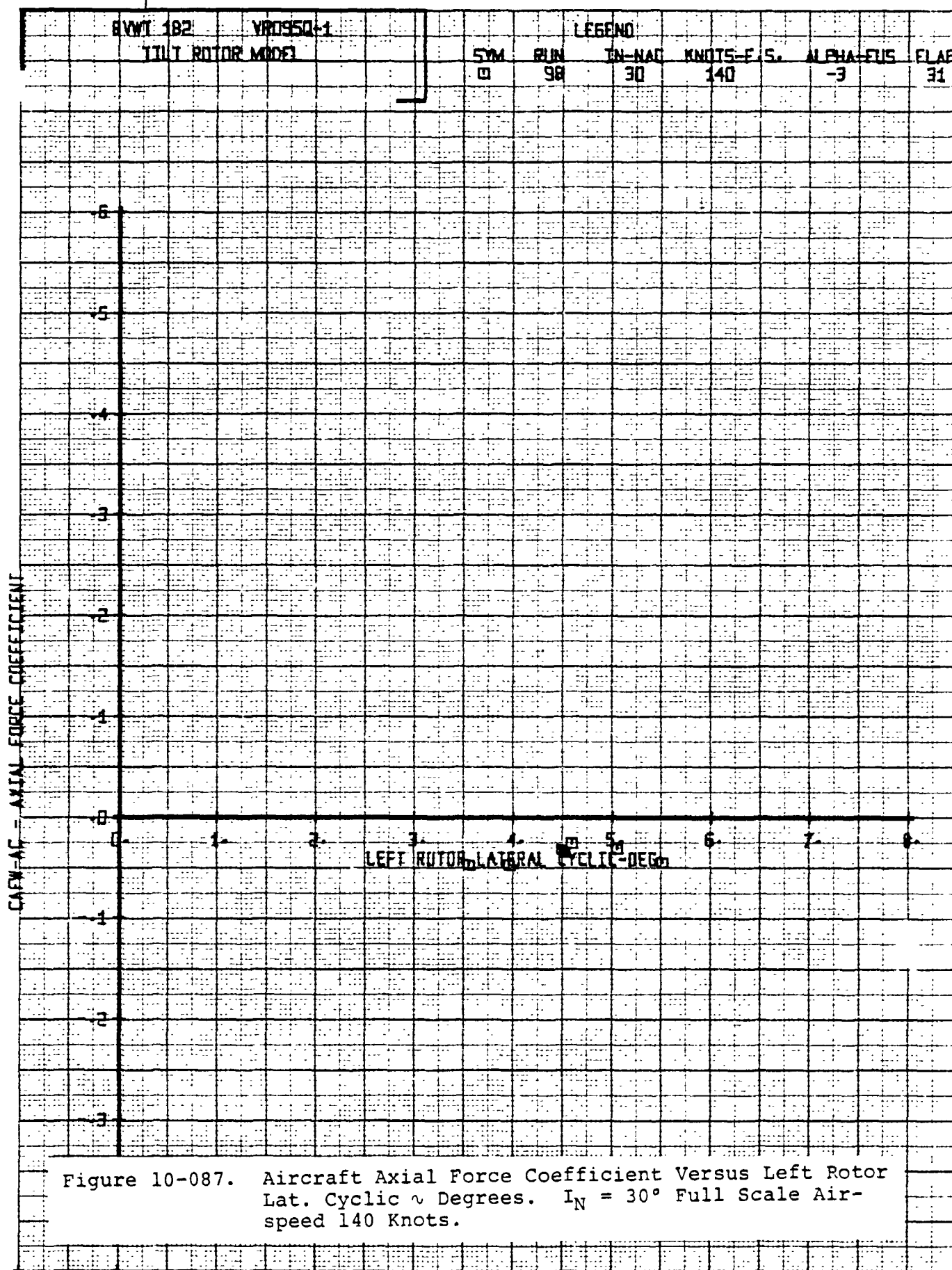
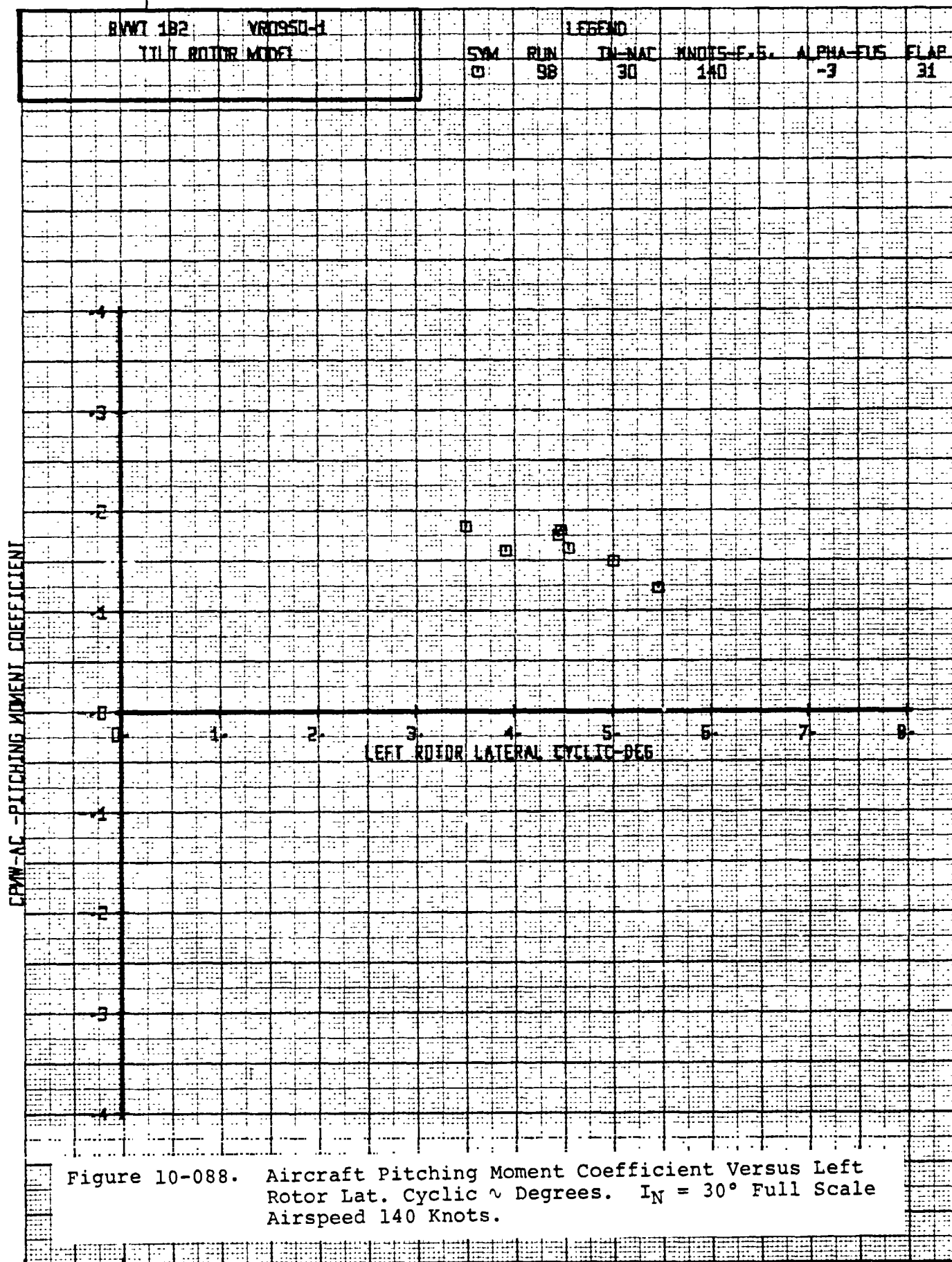


Figure 10-087. Aircraft Axial Force Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.



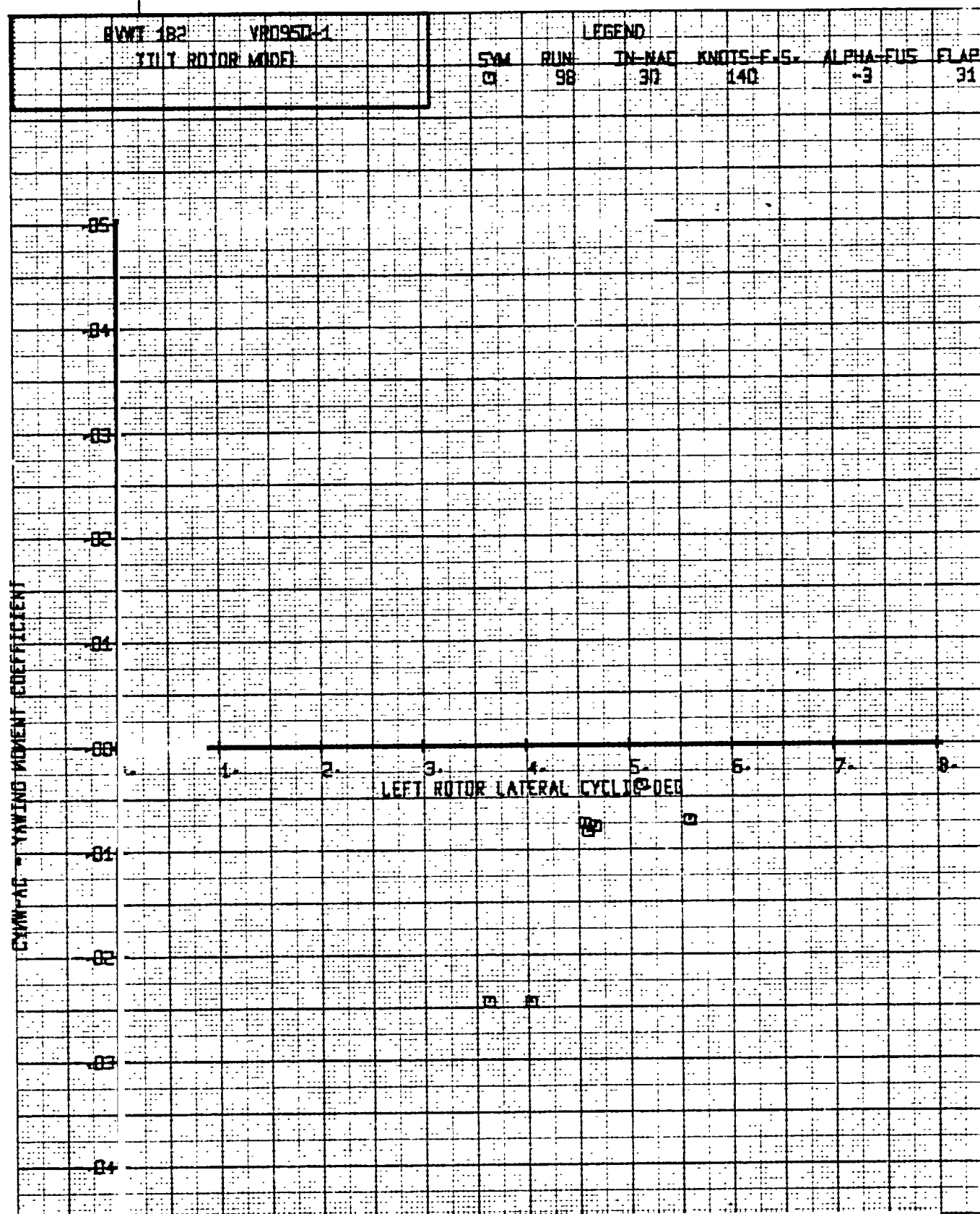
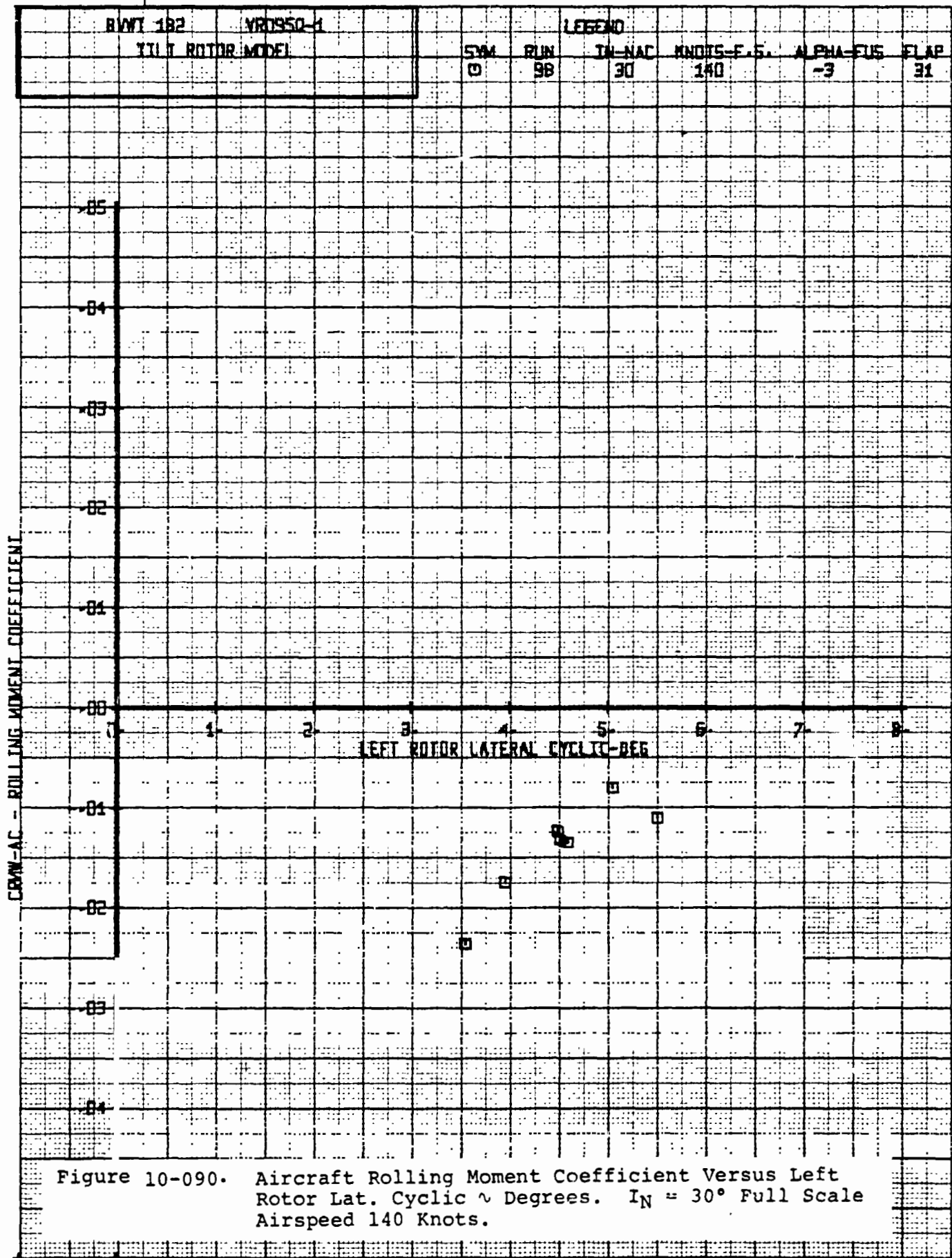
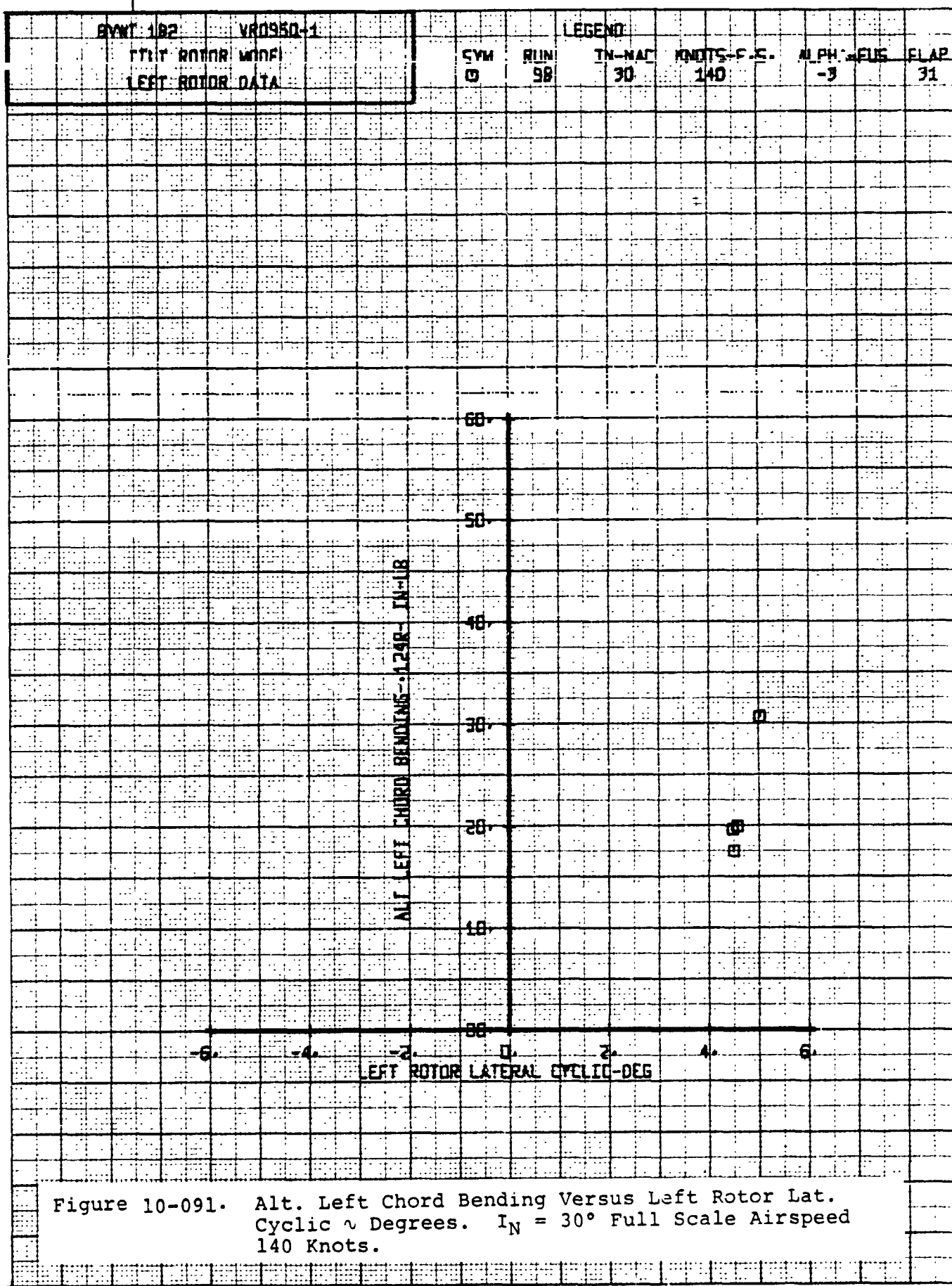


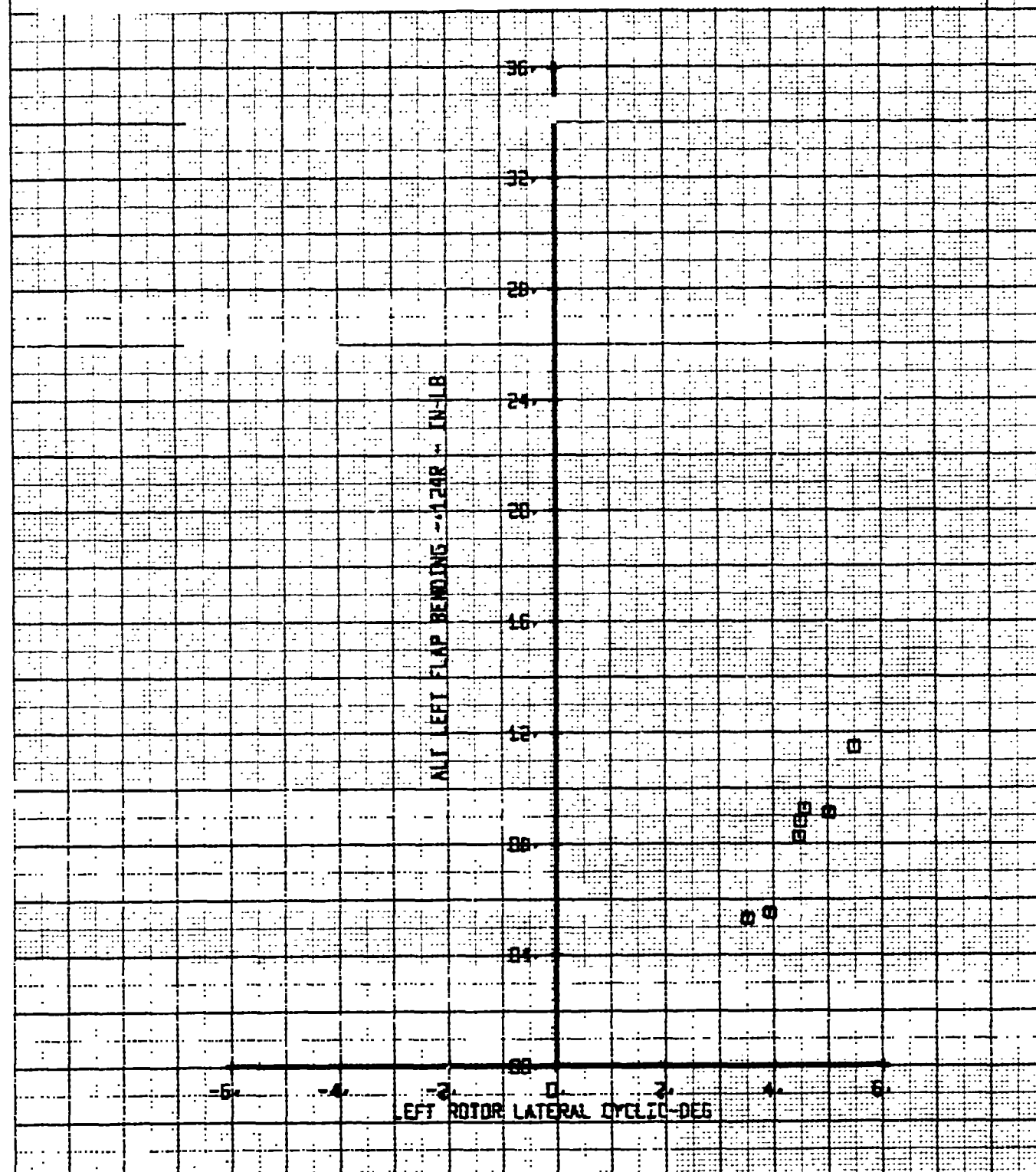
Figure 10-083. Aircraft Yawing Moment Coefficient Versus Left Rotor Lat. Cyclic in Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.





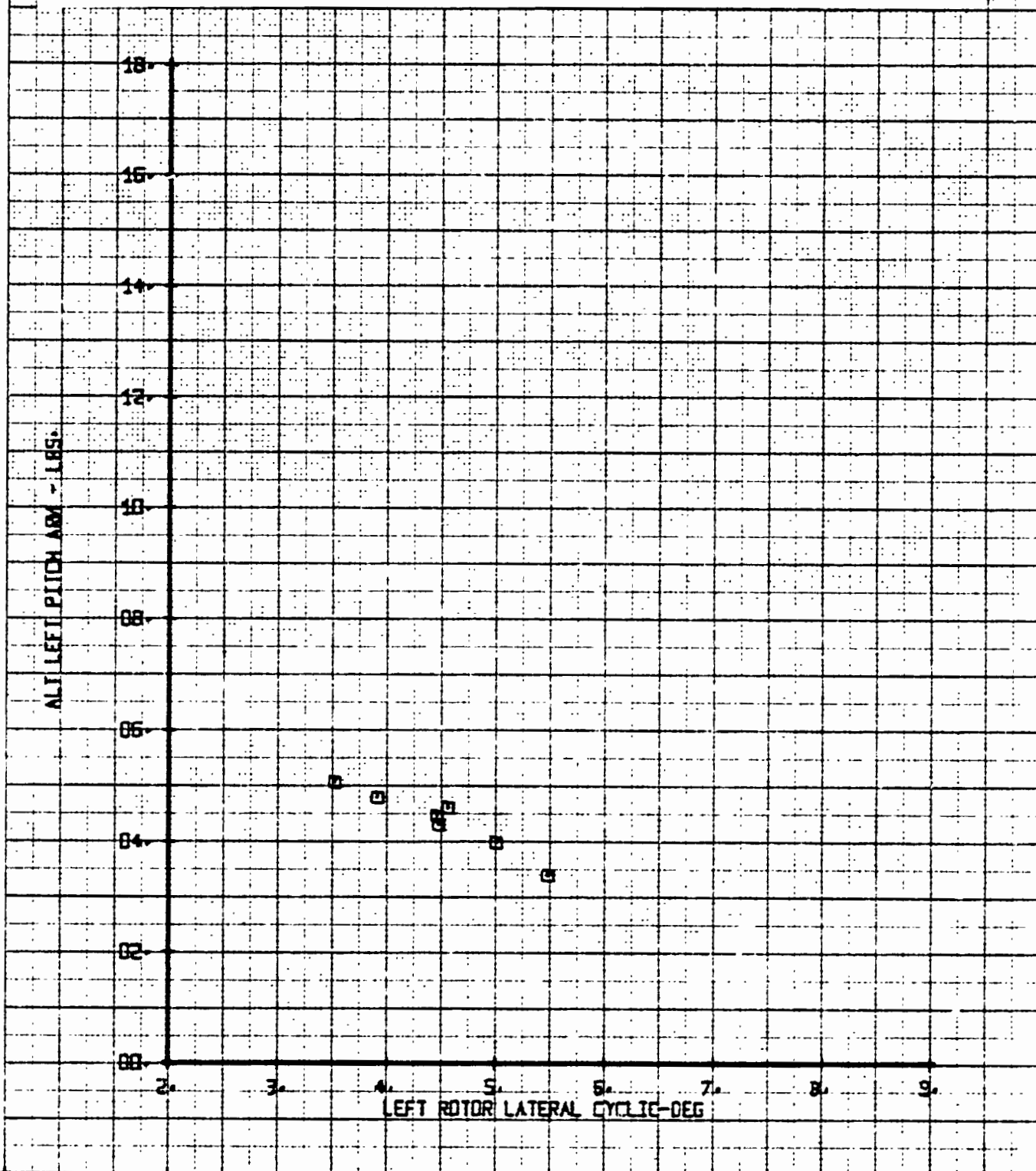
| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| SVWT 182 | VR0950-1 | LEGEND | | | | |
| TILT ROTOR MODEL | | SYM | RUN | IN-NAL | KNOTS-F.S. | ALPHA-DEG |
| LEFT ROTOR DATA | | 0 | 99 | 30 | 140 | -3 |
| | | | | | | 31 |

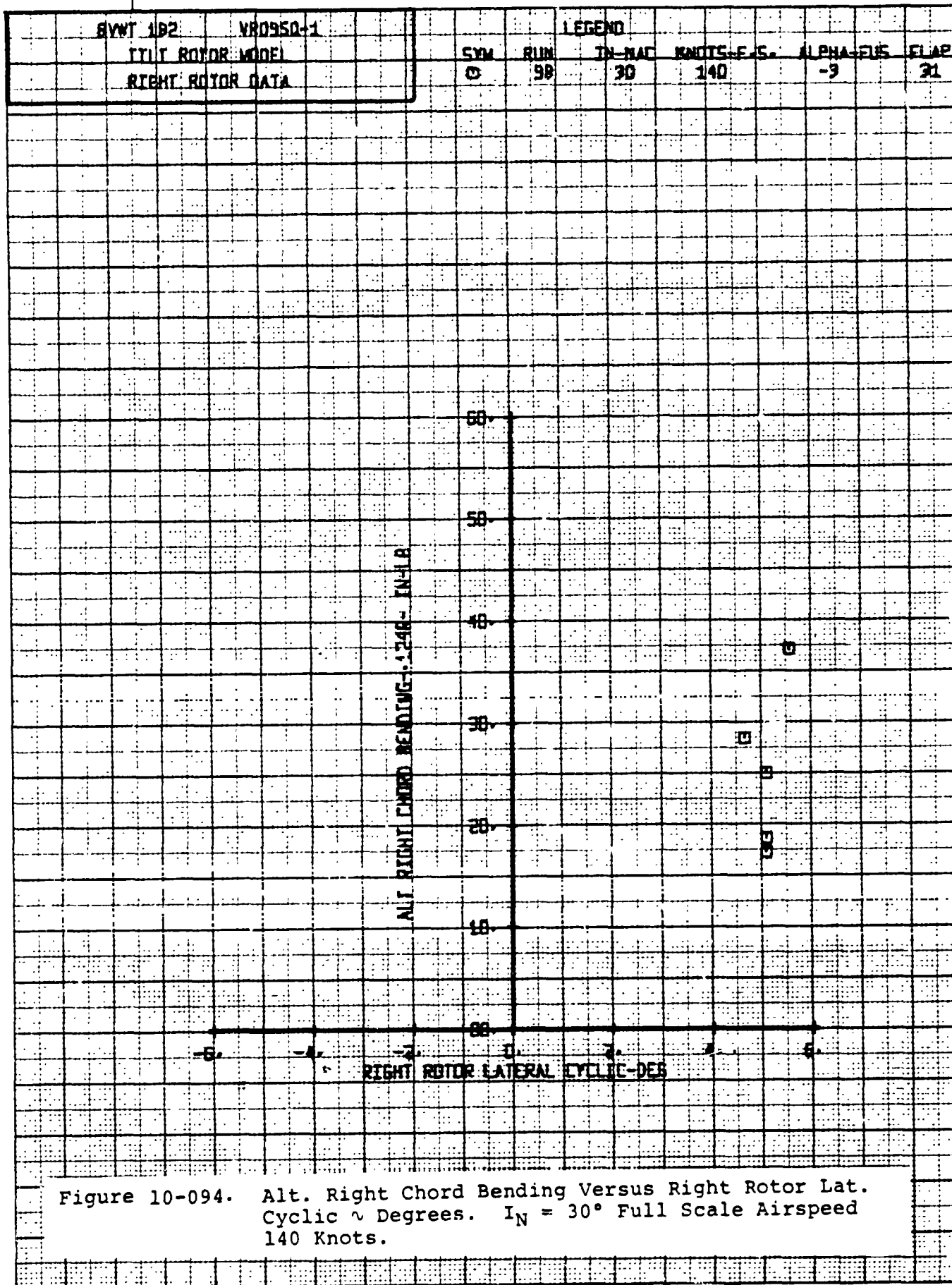
Figure 10-092. Alt. Left Flap Bending Versus Left Rotor Lat.
Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed
140 Knots.



| | | | | | | |
|-----------------|----------|--------|------|--------|------------|-----------|
| BYWT 182 | VR0950-1 | LEGEND | | | | |
| TILT ROTOR MODE | | SYM | FLIN | IN-NAC | KNOTS-F.S. | ALPHA-FUS |
| LEFT ROTOR DATA | | 0 | 98 | 30 | 140 | -3 |
| | | | | | | FLAP 31 |

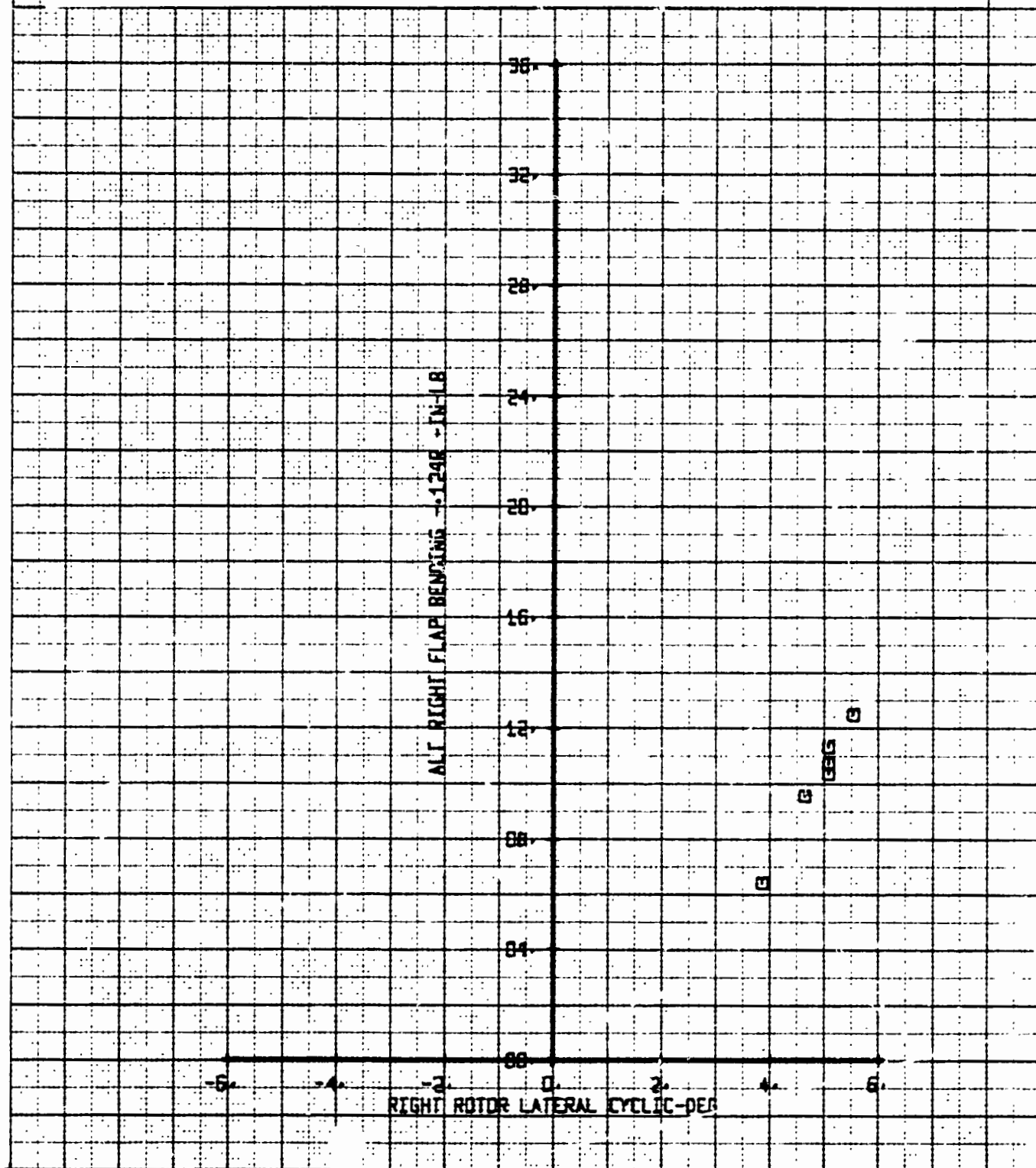
Figure 10-093. Alt. Left Pitch Link Load Versus Left Rotor Lat. Cyclic ~ degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.





| | | | | | | | |
|------------------|----------|-----|-----|--------|------------|-----------|------|
| BYWT 182 | VR0950-1 | SYN | RUN | IN-HAC | KNOTS-F.S. | ALPHA-FUS | FLAP |
| RIGHT ROTOR DATA | | 0 | 98 | 30 | 140 | -3 | 31 |

Figure 10-095. Alt. Right Flap Bending Versus Right Rotor Lat. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.



BVWT 182 YR0950-1

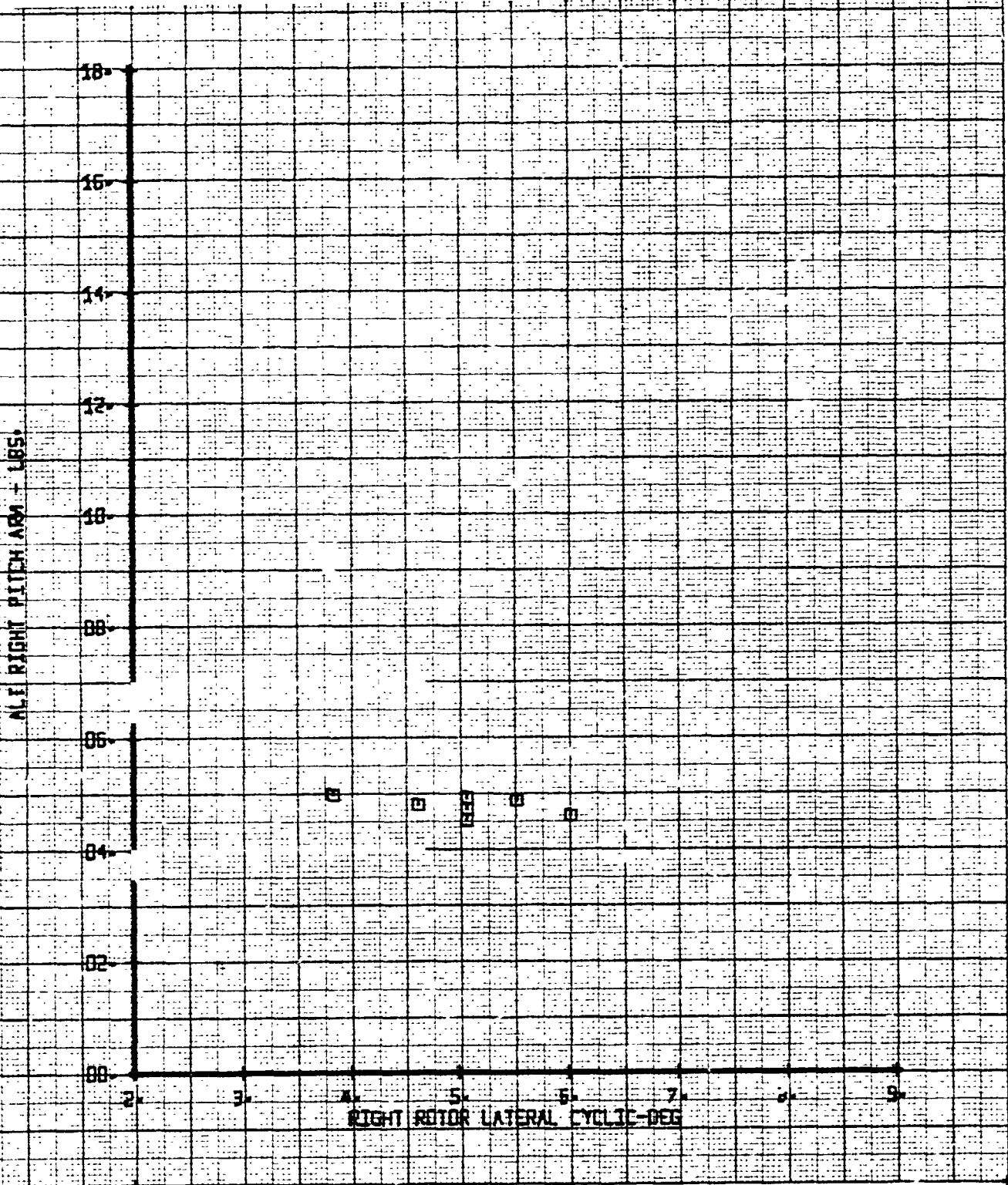
LEFT ROTOR MODEL

RIGHT ROTOR DATA

LEGEND

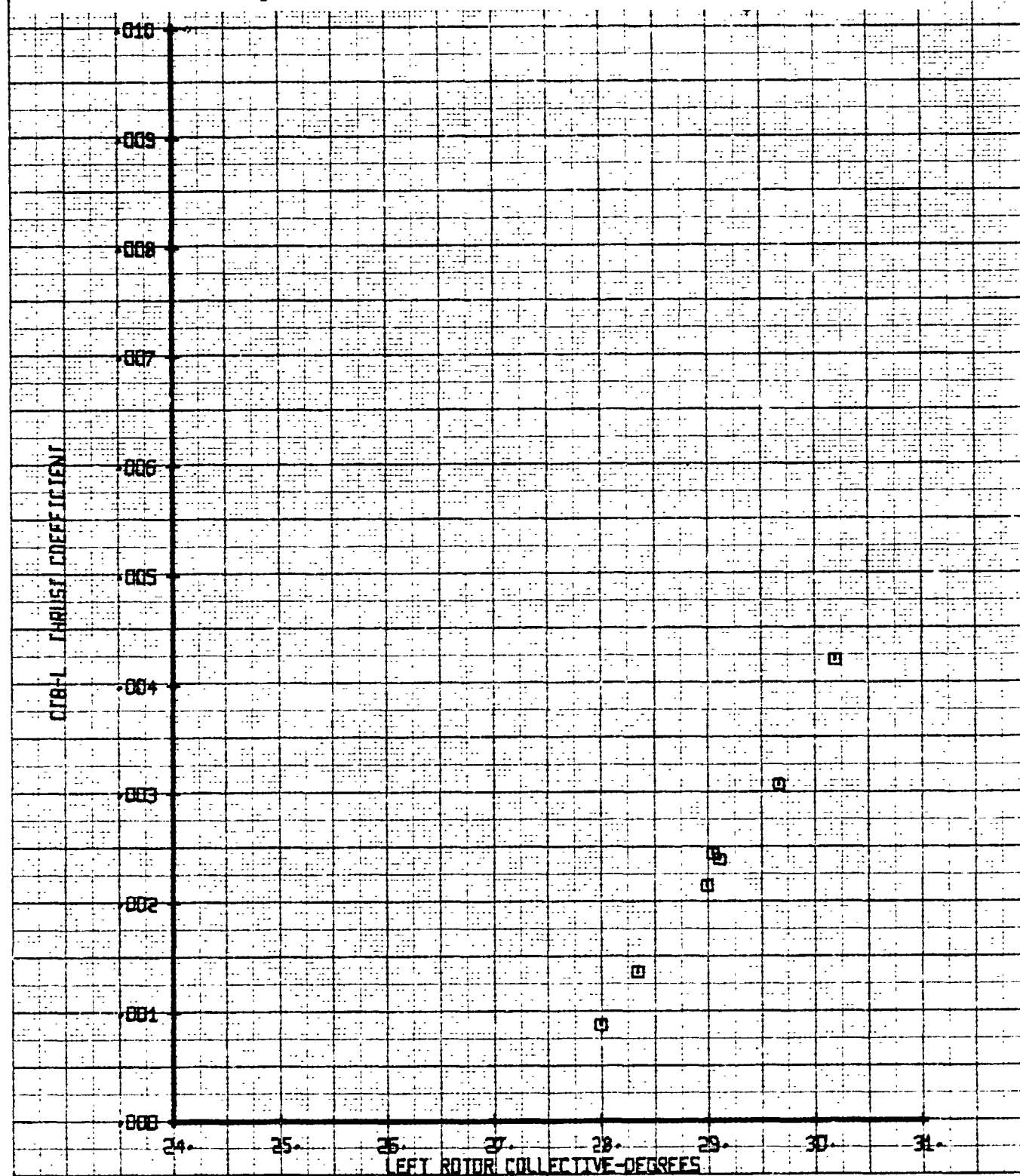
SYM
CRUN
98IN-NAC
30KNOTS-F.E.
140ALPHA-FUS
-3FLAP
31

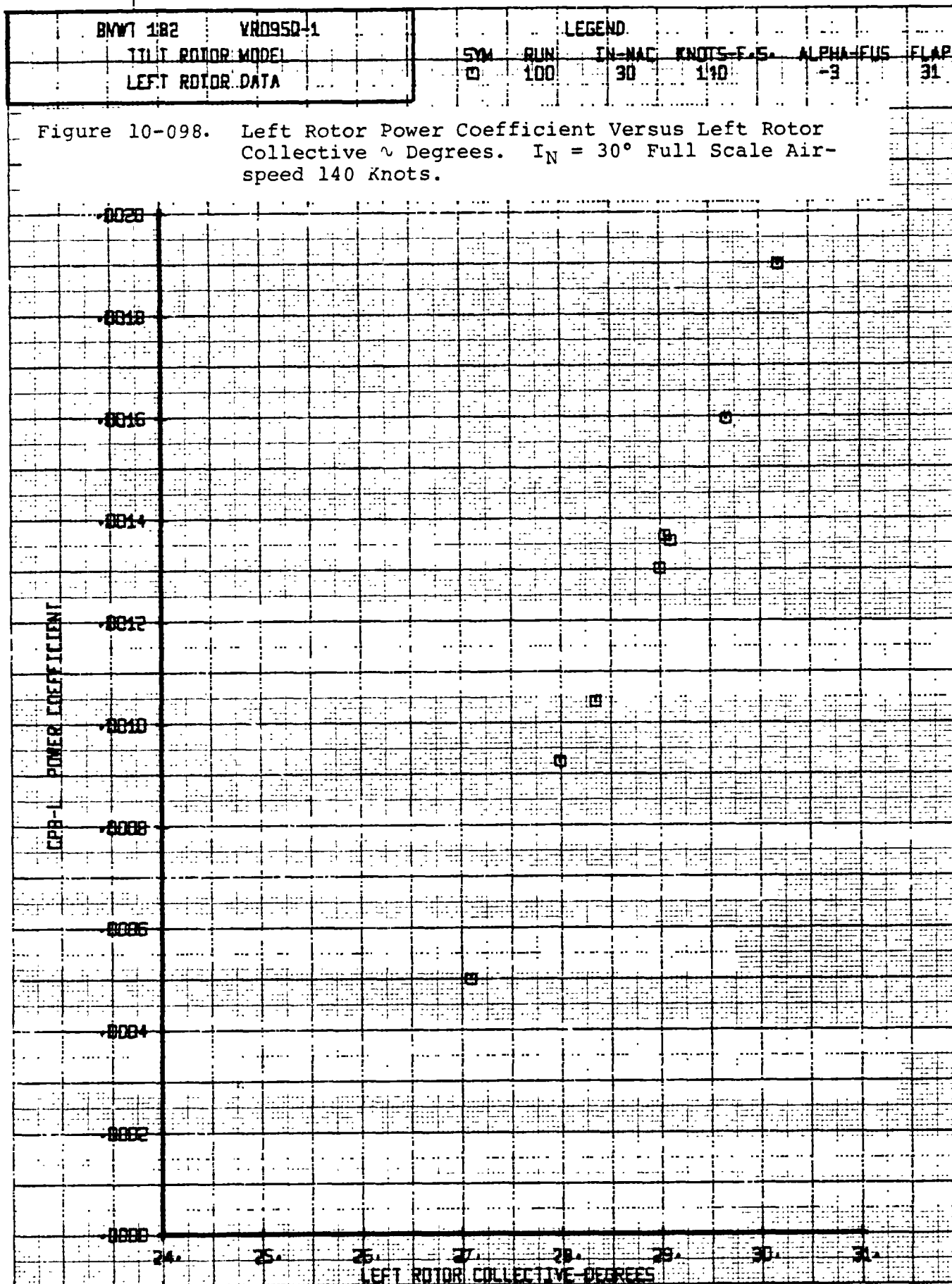
Figure 10-096. Alt. Right Pitch Link Load Versus Right Rotor Lat. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.

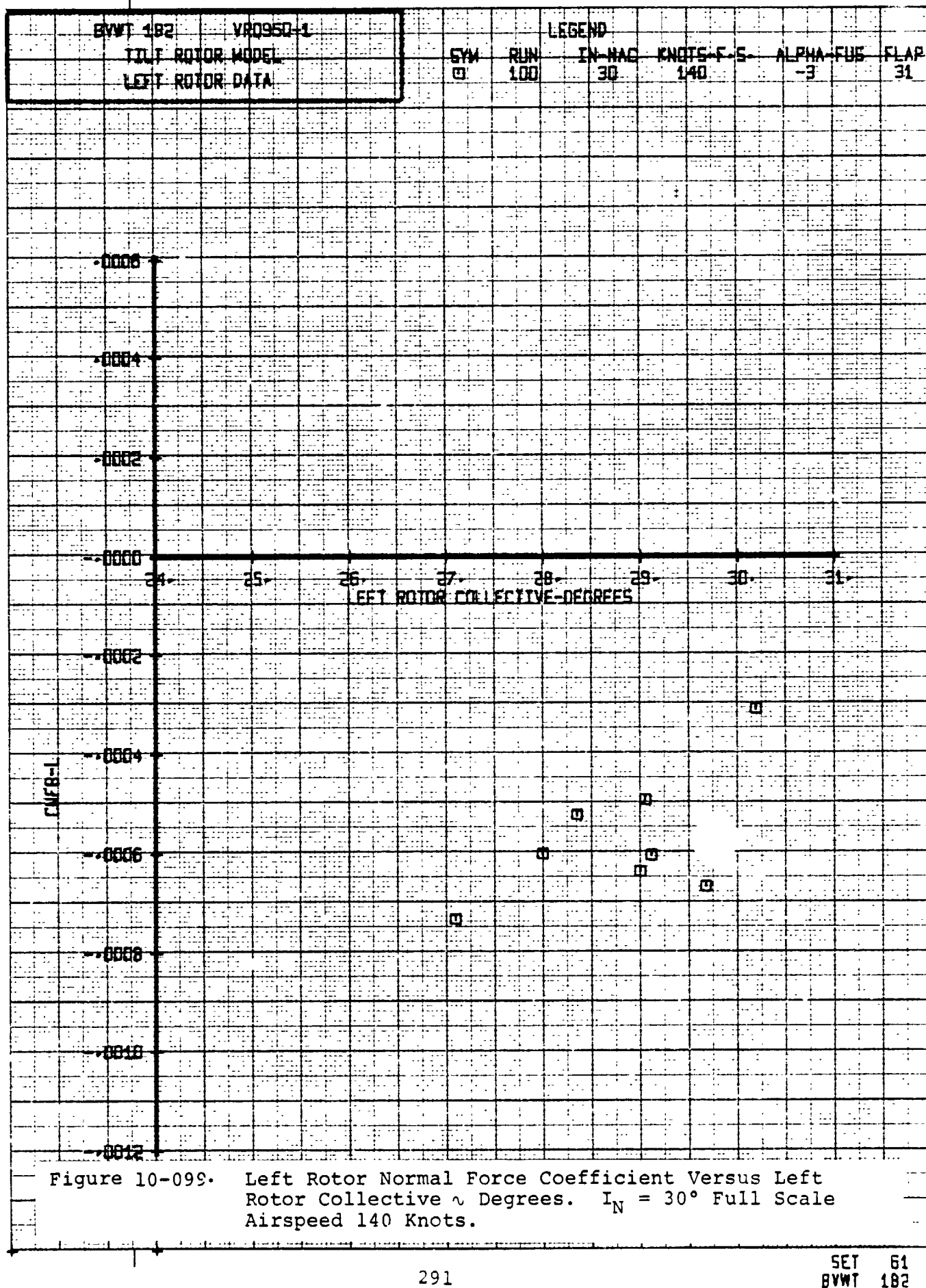


| | | | | | | |
|------------------|----------|--------|-----|--------|-----------|-----------|
| BVWT 182 | YR0950-1 | LEGEND | | | | |
| TILT ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-F-S | ALPHA-FUS |
| LEFT ROTOR DATA | | □ | 100 | 30 | 140 | -3 |
| | | | | | | FLAP 31 |

Figure 10-097. Left Rotor Thrust Coefficient Versus Left Rotor Collective ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.







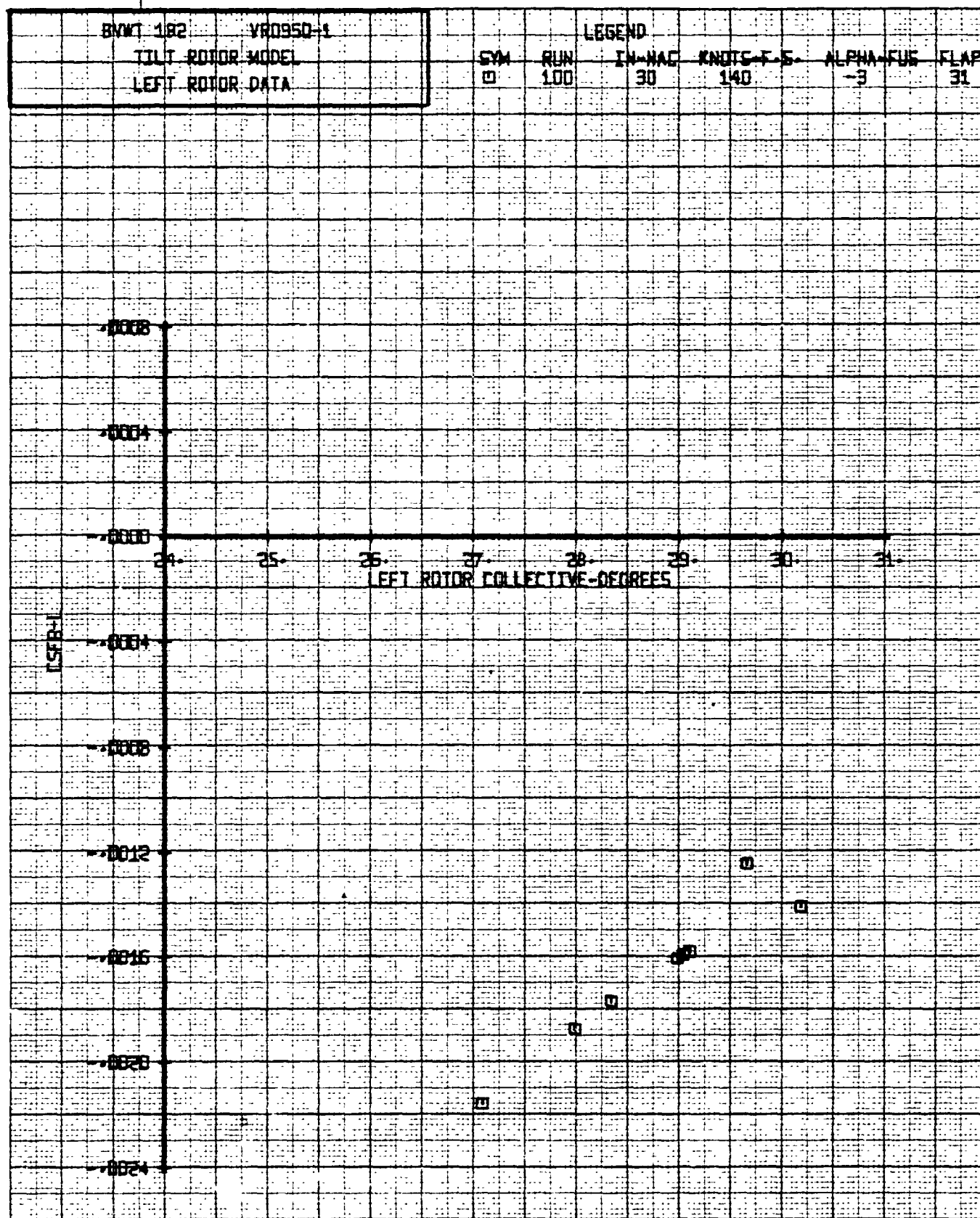


Figure 10-100. Left Rotor Side Force Coefficient Versus Left Rotor Collective ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.

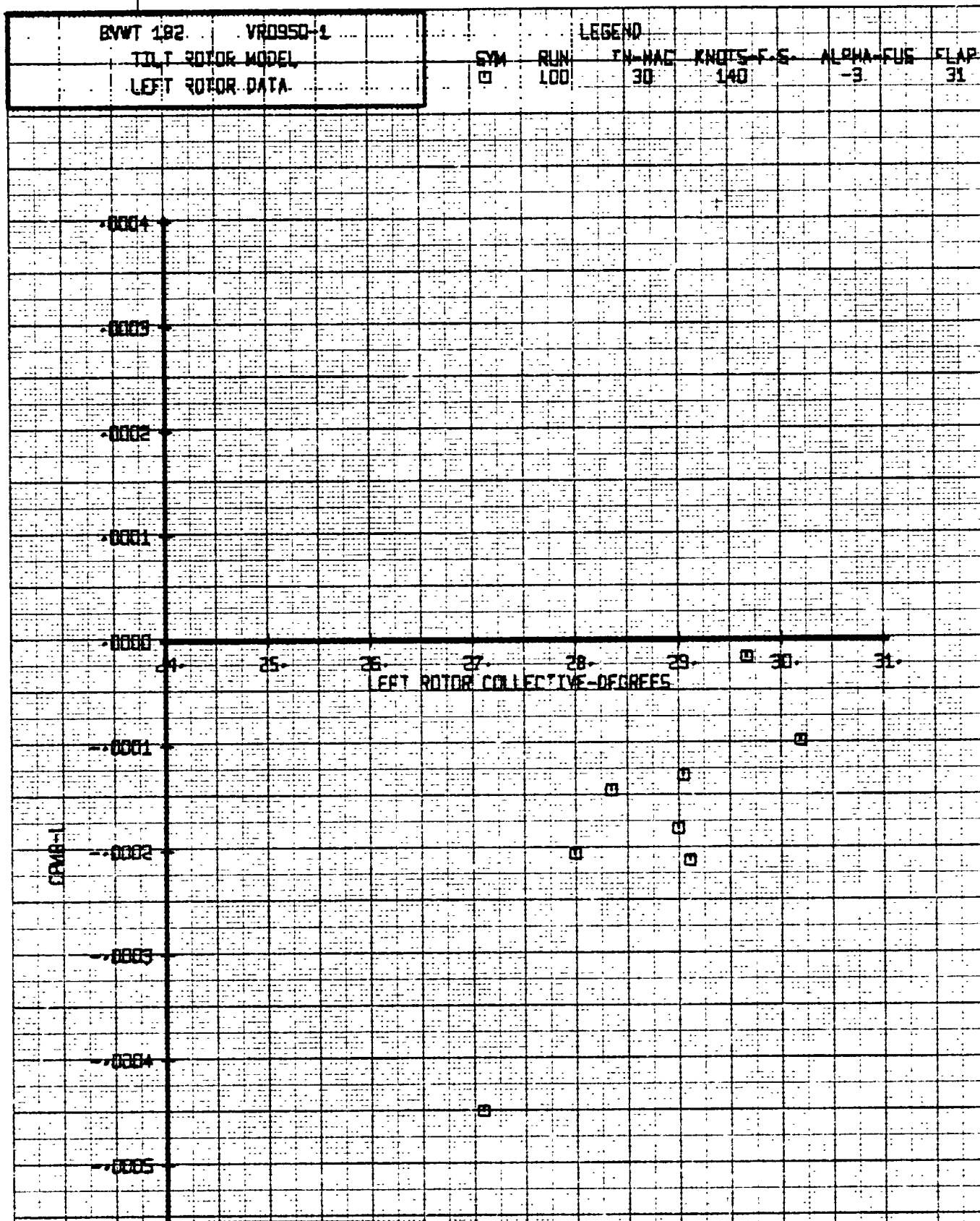
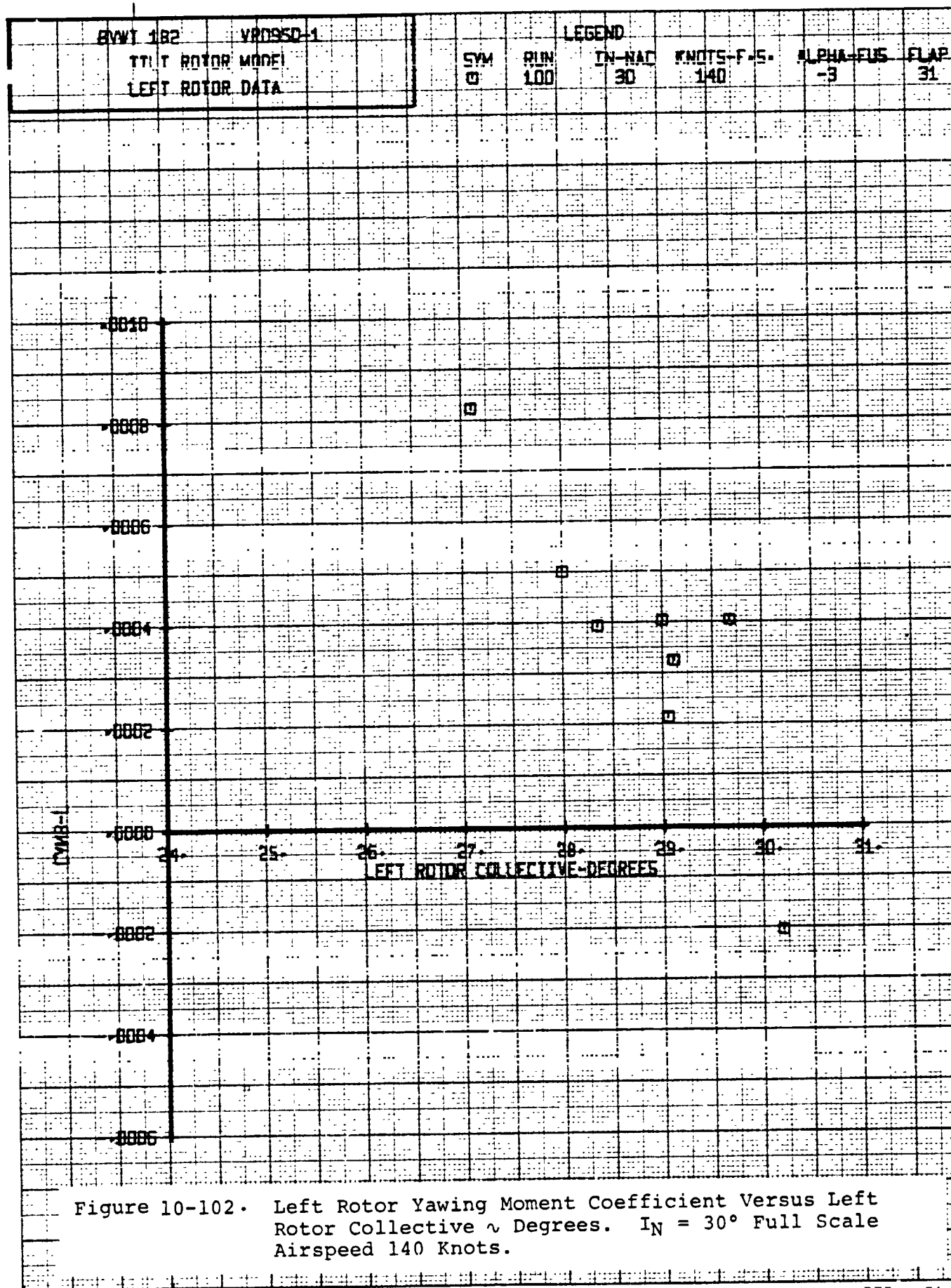
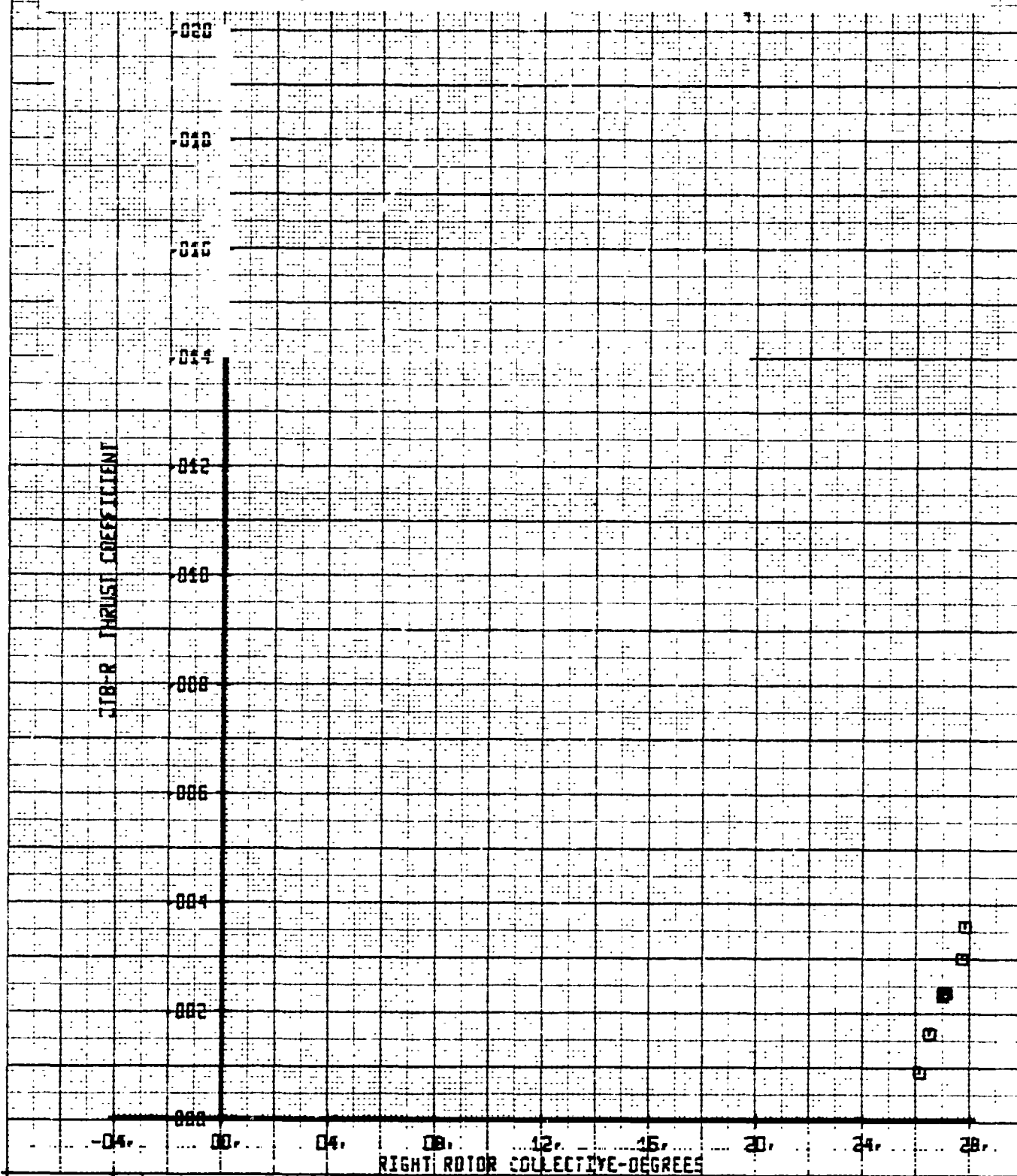


Figure 10-101. Left Rotor Pitching Moment Coefficient Versus Left Rotor Collective α Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.



| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| RVWT 182 | VR0950-1 | LEGEND | | | | |
| YUT ROTOR MODEL | | SYM | RUN | IN-MAR | KNOTS-E.S. | ALPHA-EUS |
| RIGHT ROTOR DATA | | 0 | 100 | 30 | 140 | -3 |
| | | | | | | 31 |

Figure 10-103 - Right Rotor Thrust Coefficient Versus Right Rotor Collective γ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.



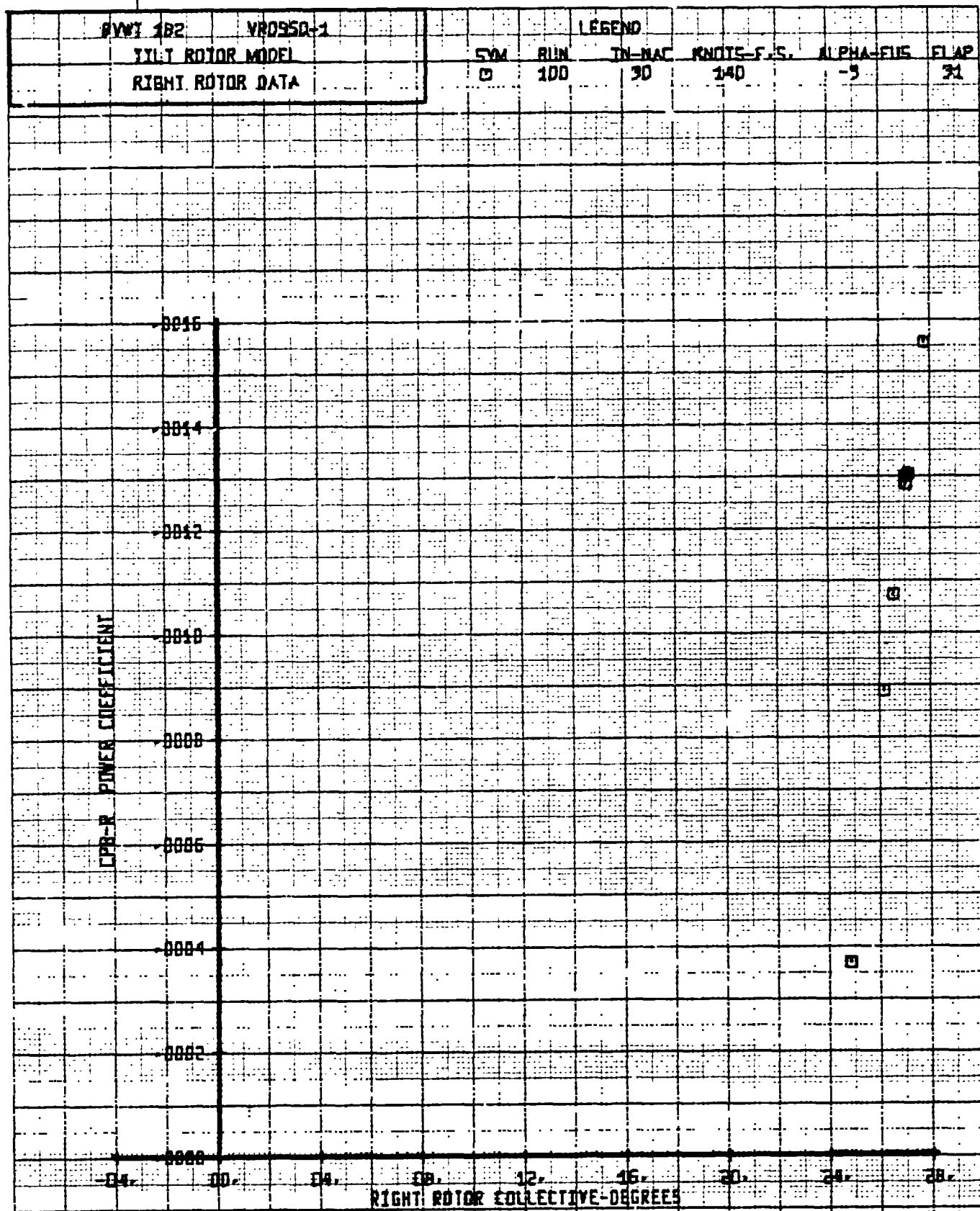
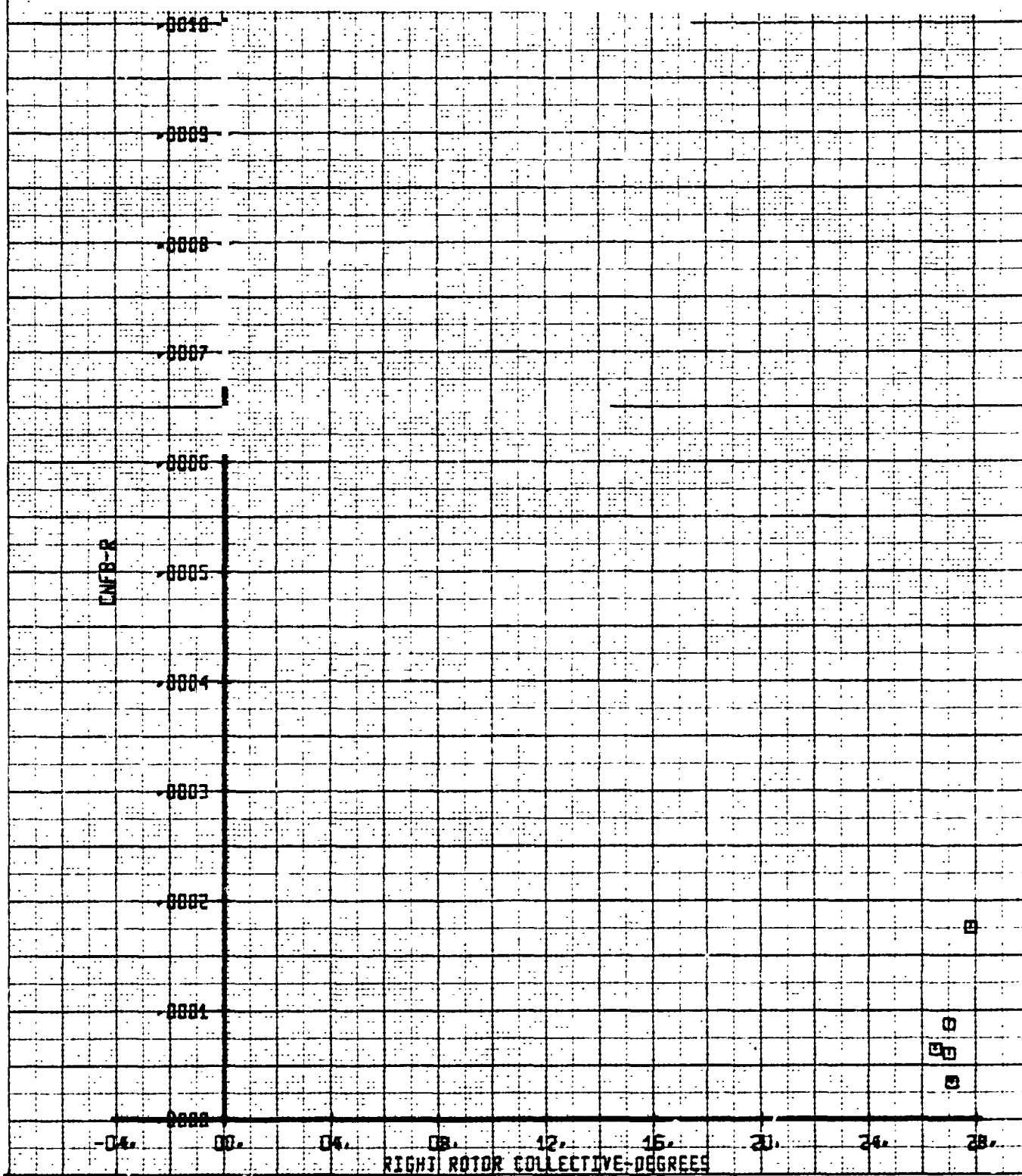
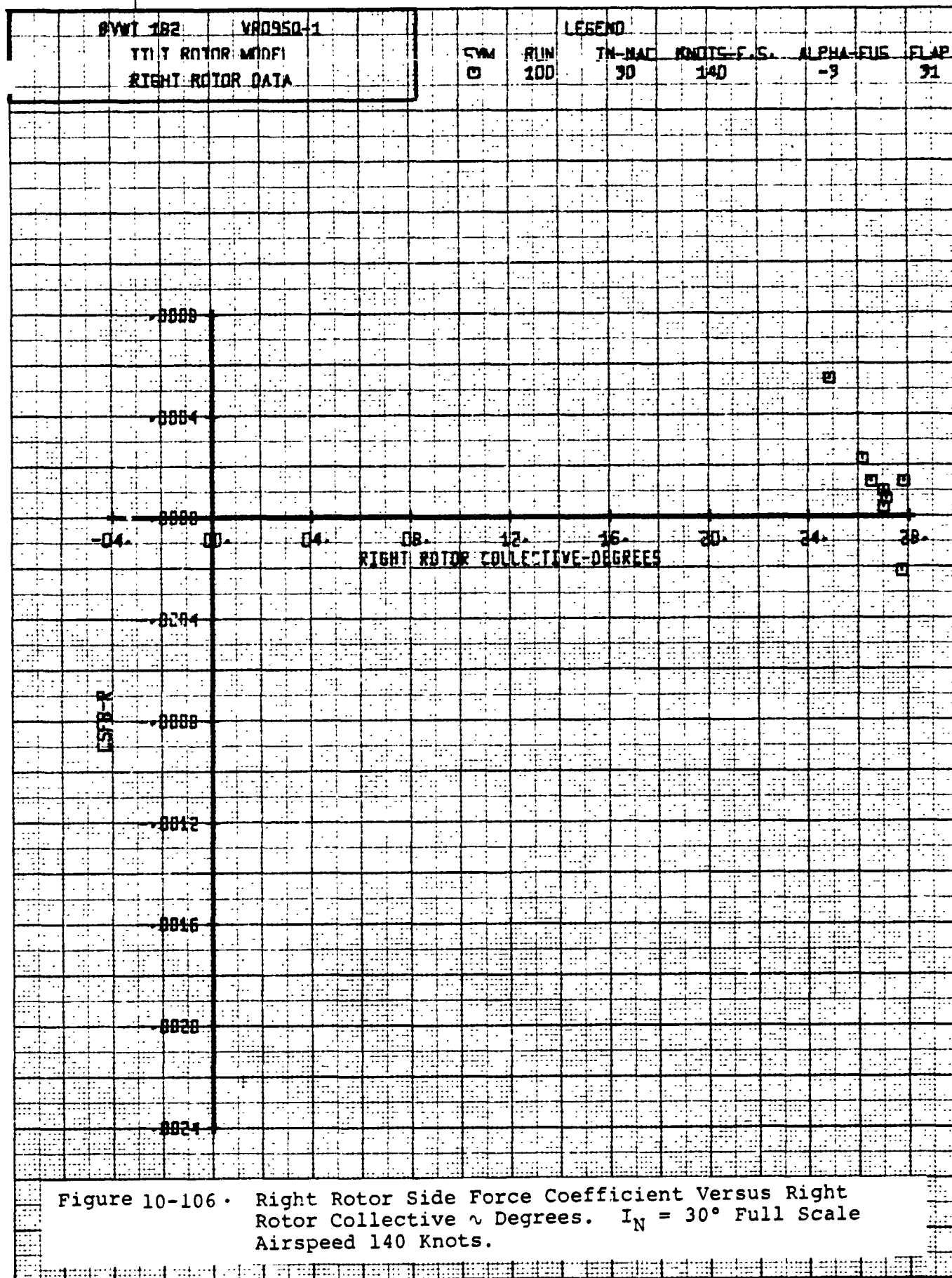


Figure 10-104. Right Rotor Power Coefficient Versus Right Rotor Collective α Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.

| | | | | | | | | | |
|------------------|--|----------|-----|--------|------------|-----------|------|--|--|
| BVWT 182 | | VR0350-1 | | LEGEND | | | | | |
| TILT ROTOR MODEL | | SYM | RUN | IN-MAC | KNOTS-F.S. | ALPHA-FUS | FLAP | | |
| RIGHT ROTOR DATA | | 0 | 100 | 30 | 140 | -3 | 31 | | |

Figure 10-105. Right Rotor Normal Force Coefficient Versus Right Rotor Collective δ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.





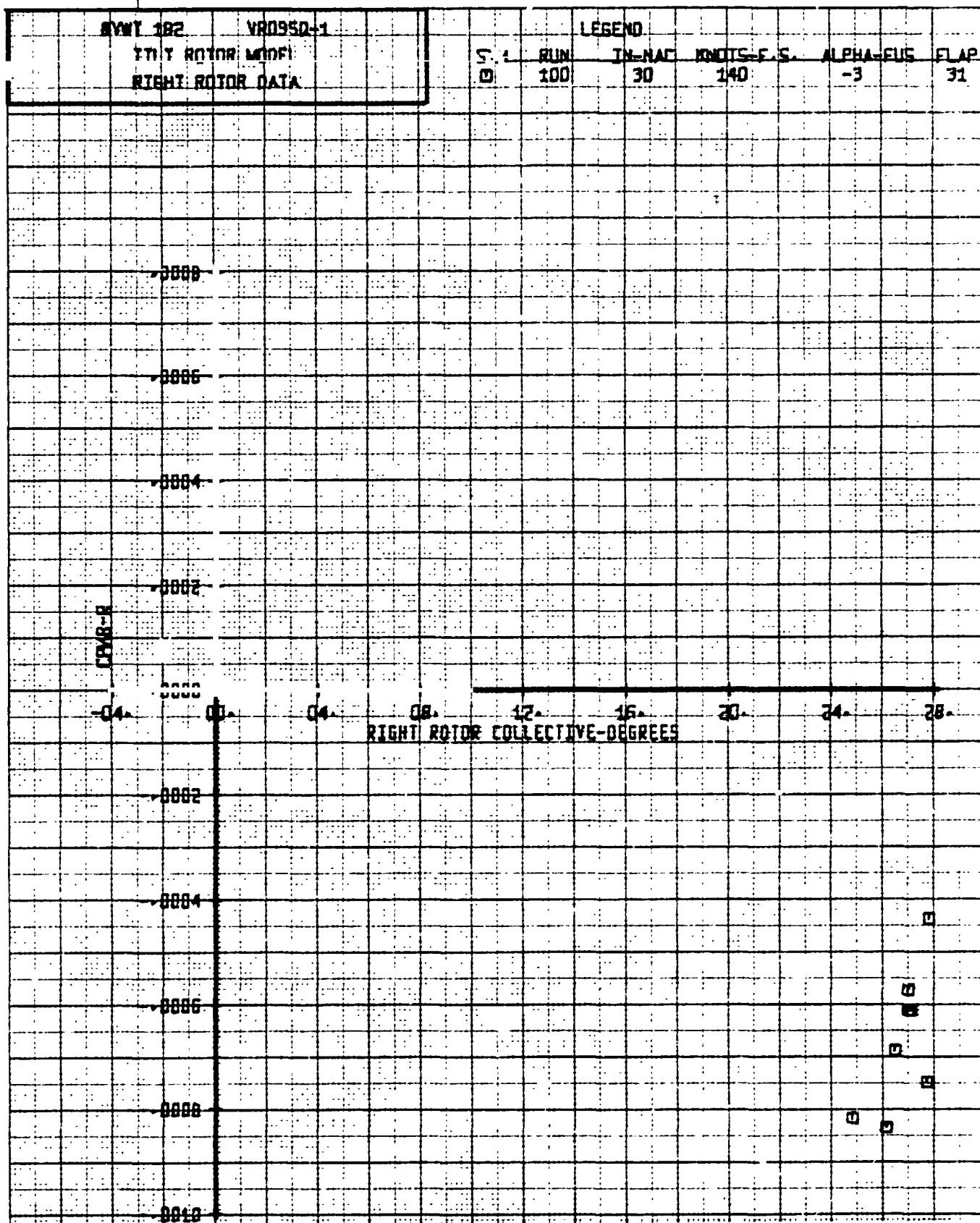
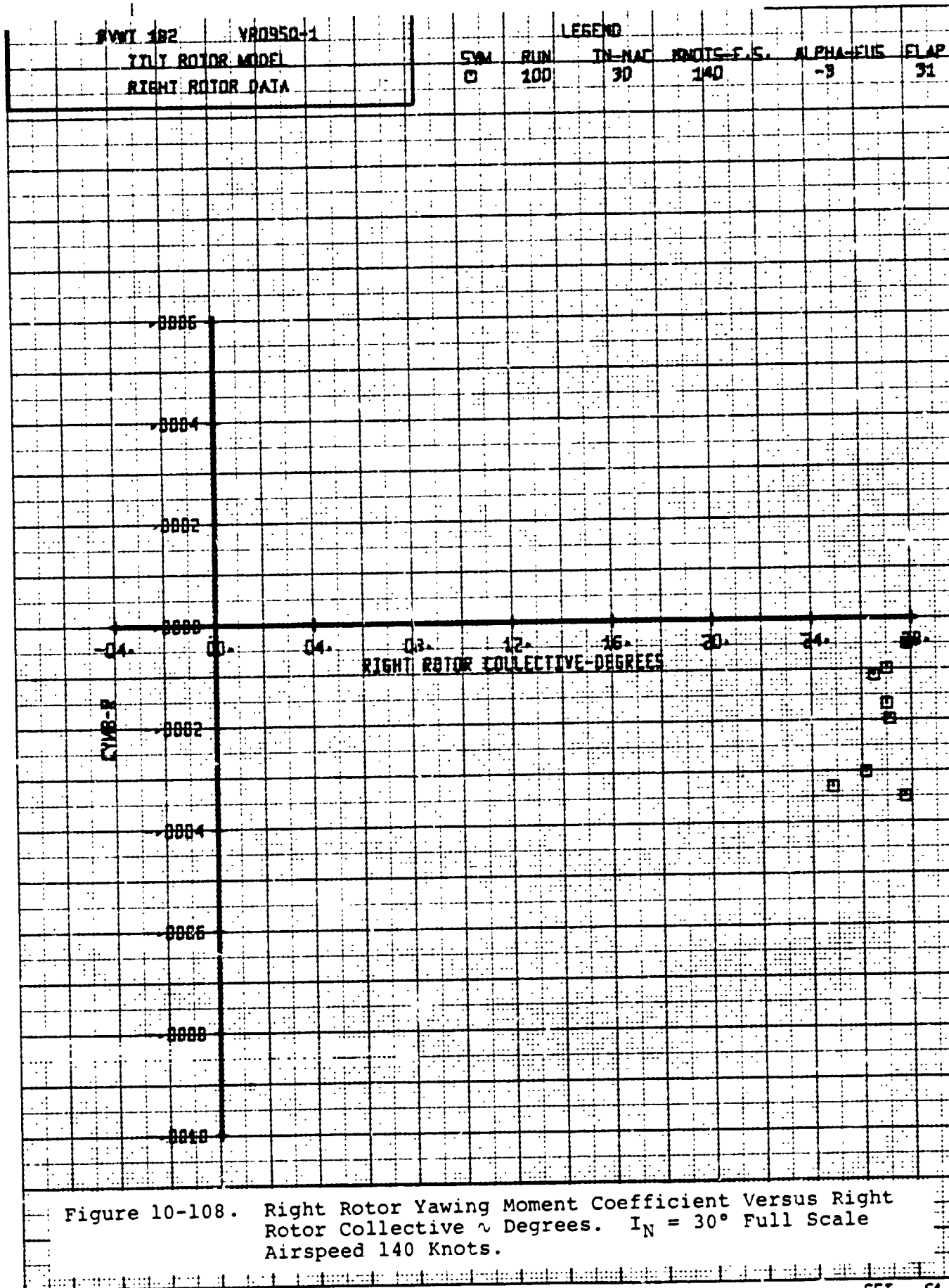
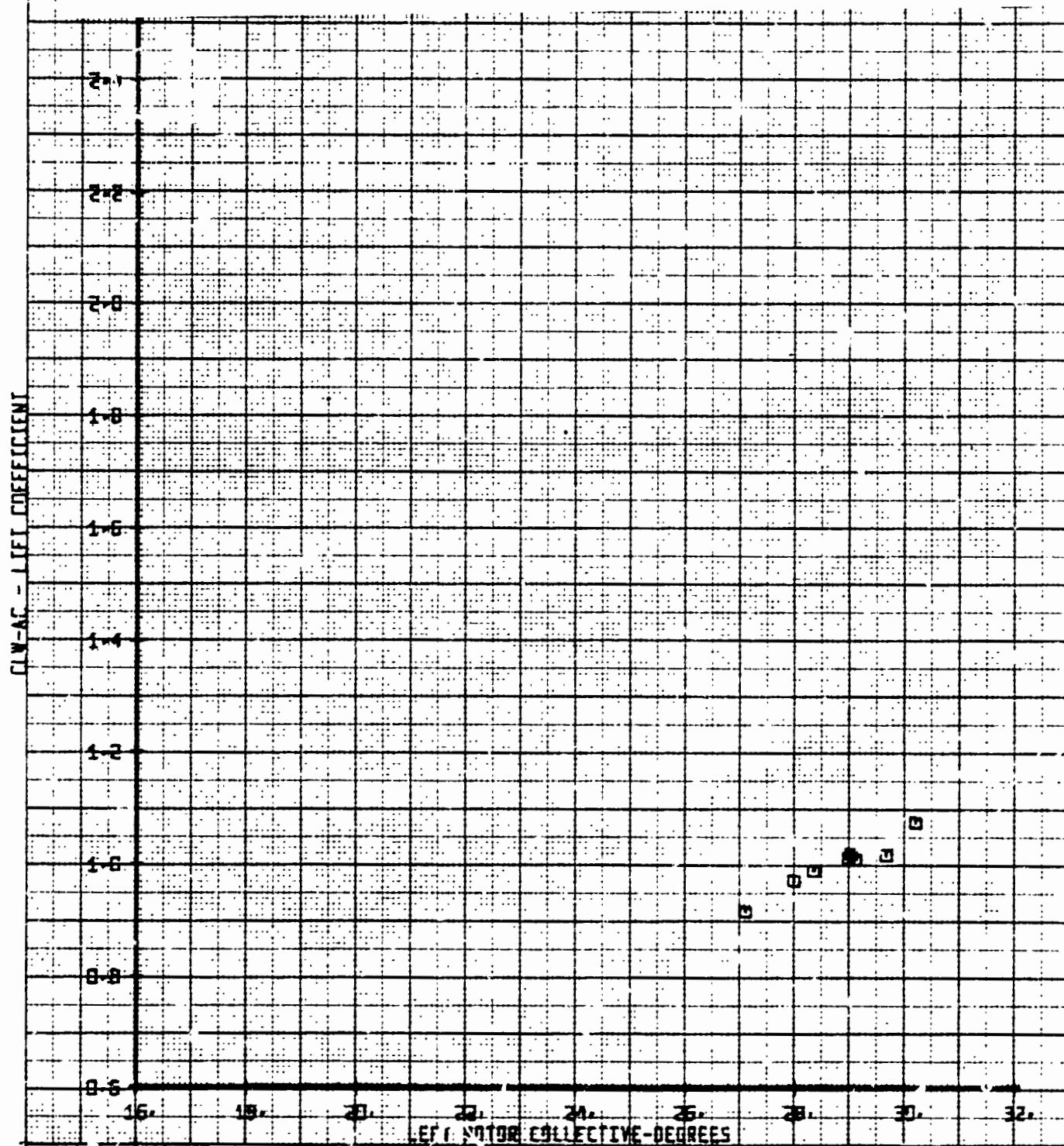


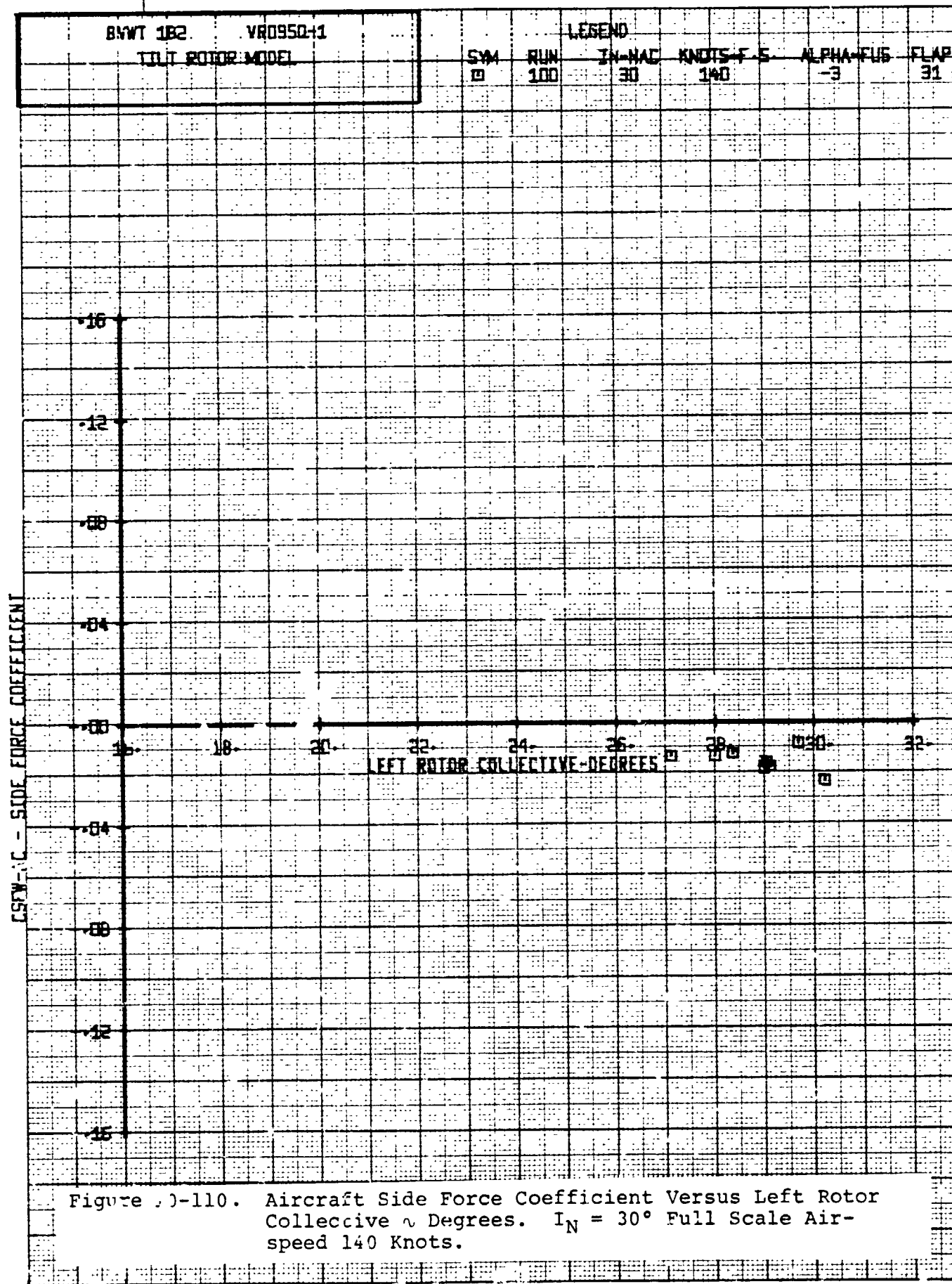
Figure 10-107 • Right Rotor Pitching Moment Coefficient Versus Right Rotor Collective ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.

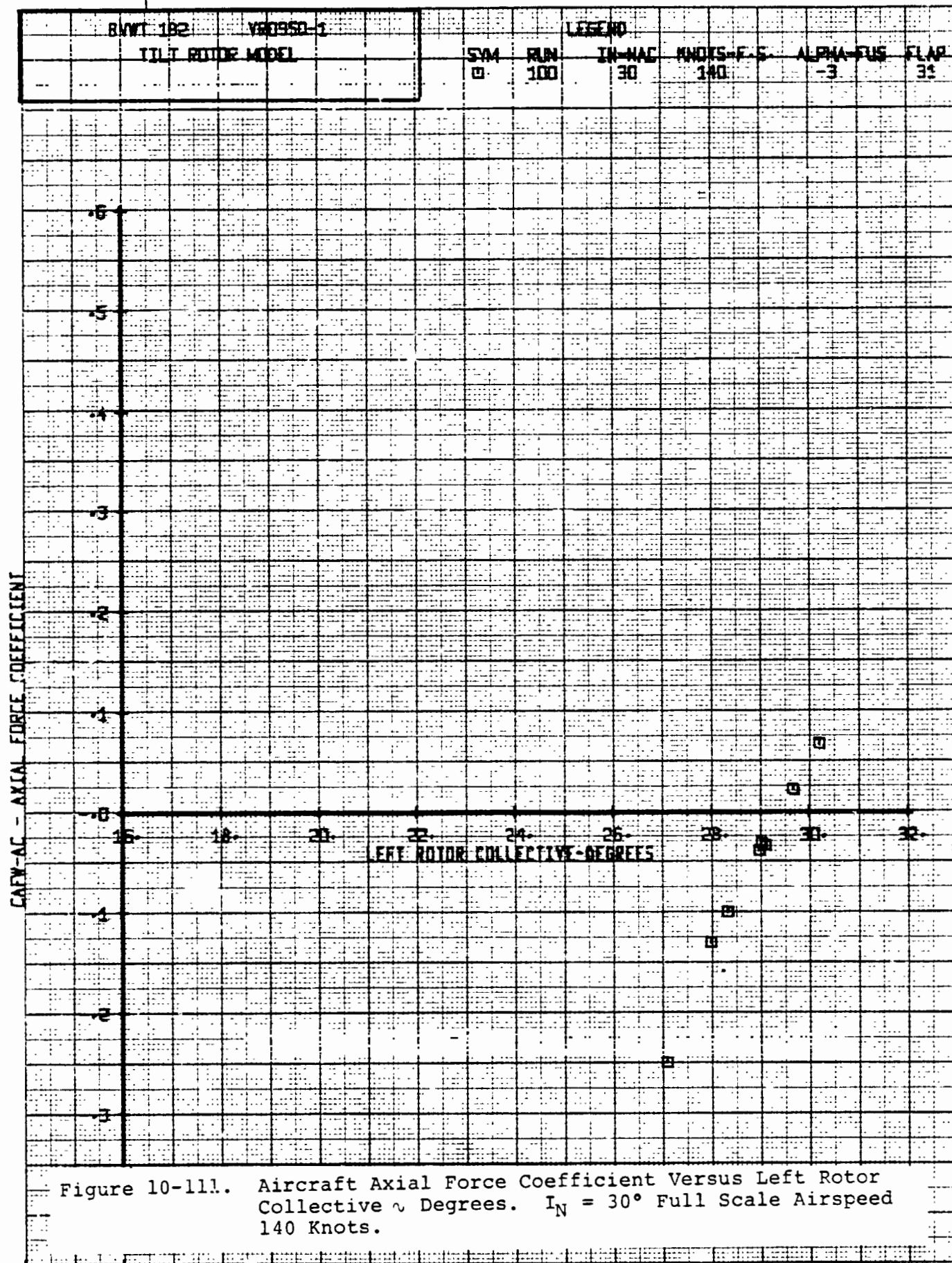


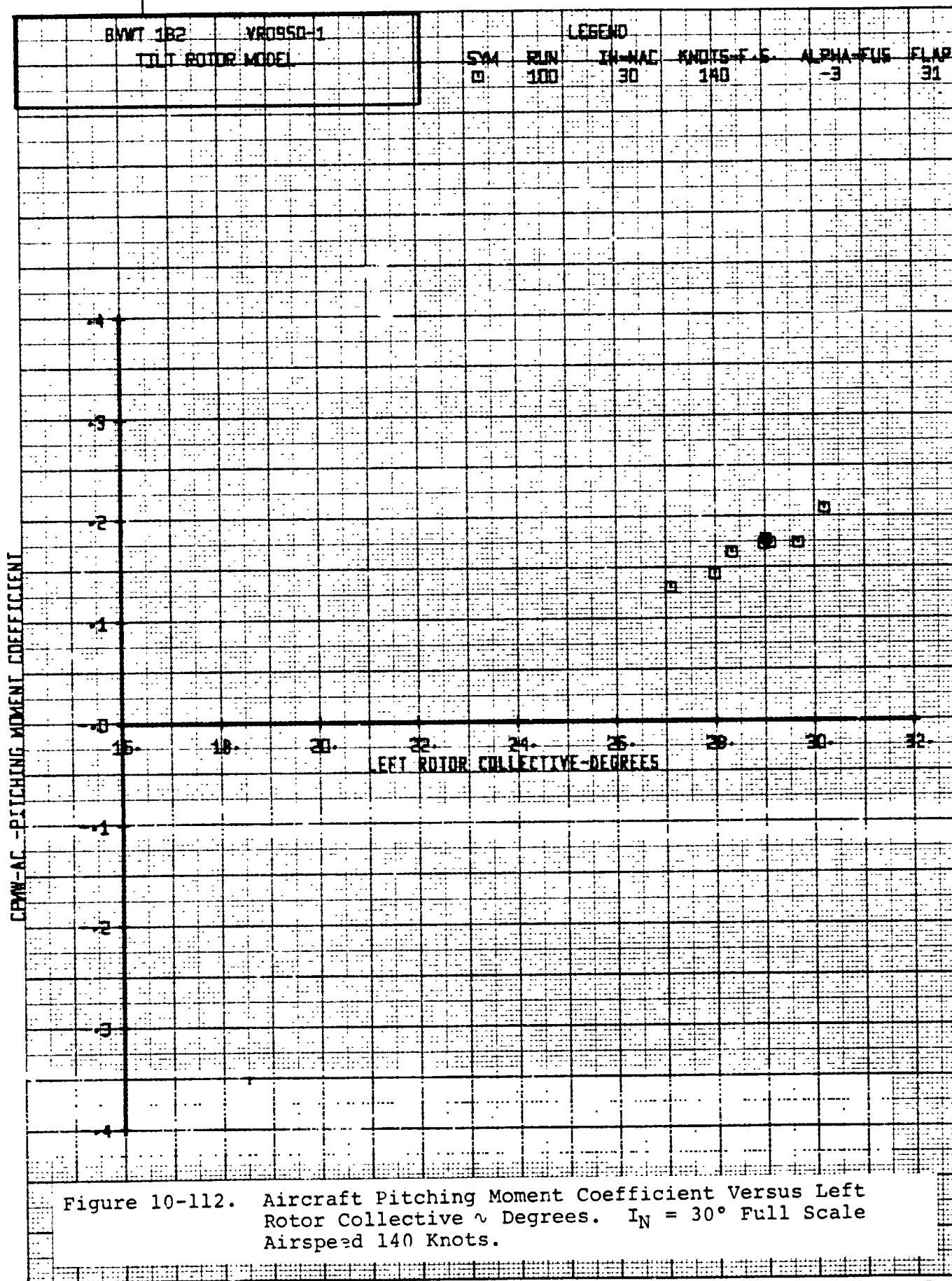
| | | | | | | |
|----------|----------|--------|--------|------------|-----------|------|
| BWWT 182 | VR0950-1 | LEGEND | | | | |
| SYN | | RUN | IN-MAC | KNOTS-F.S. | ALPHA-FUS | FLAP |
| □ | | 100 | 30 | 140 | -3 | 31 |

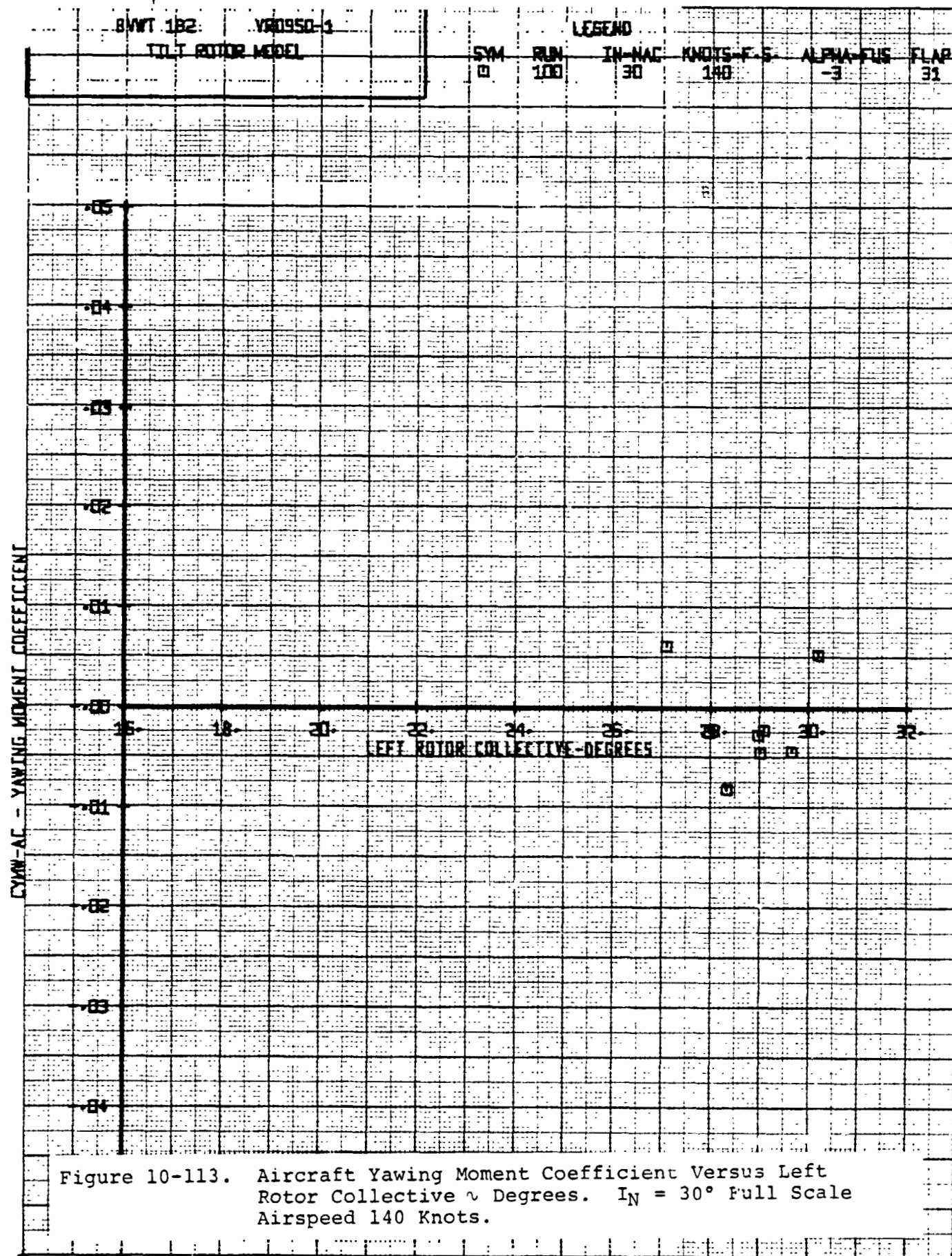
Figure 10-109. Aircraft Lift Coefficient Versus Left Rotor Collective α Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.

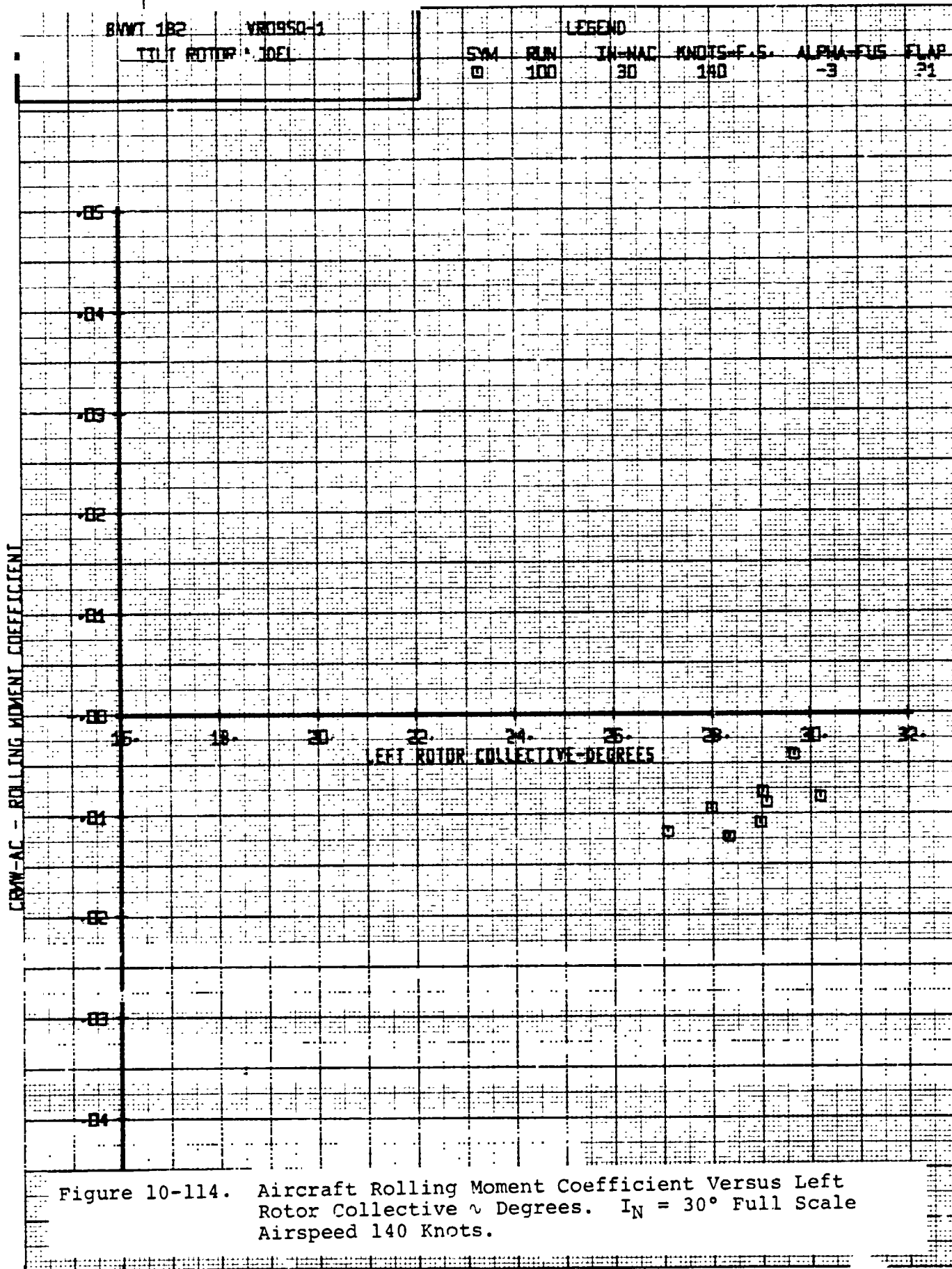


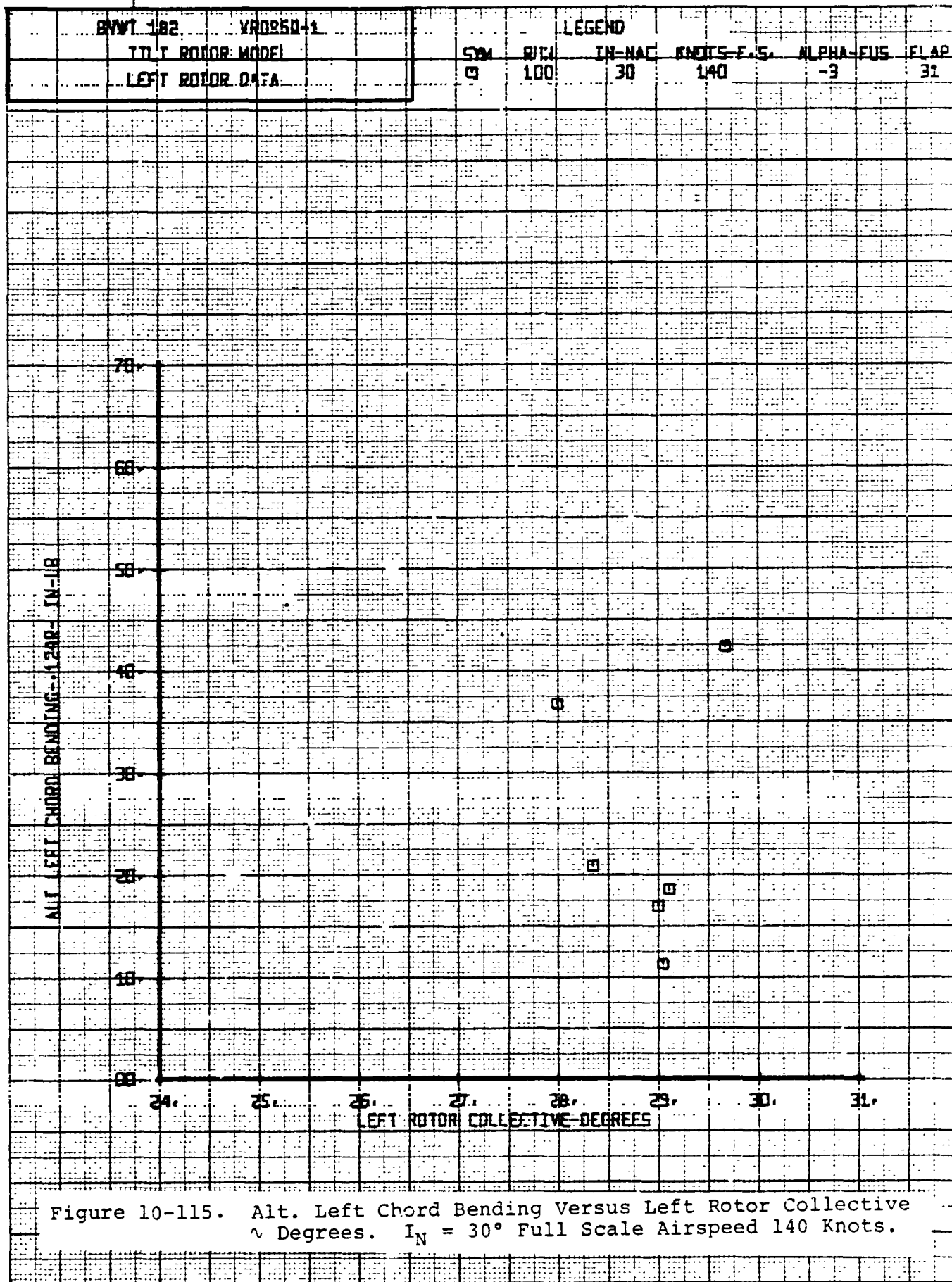






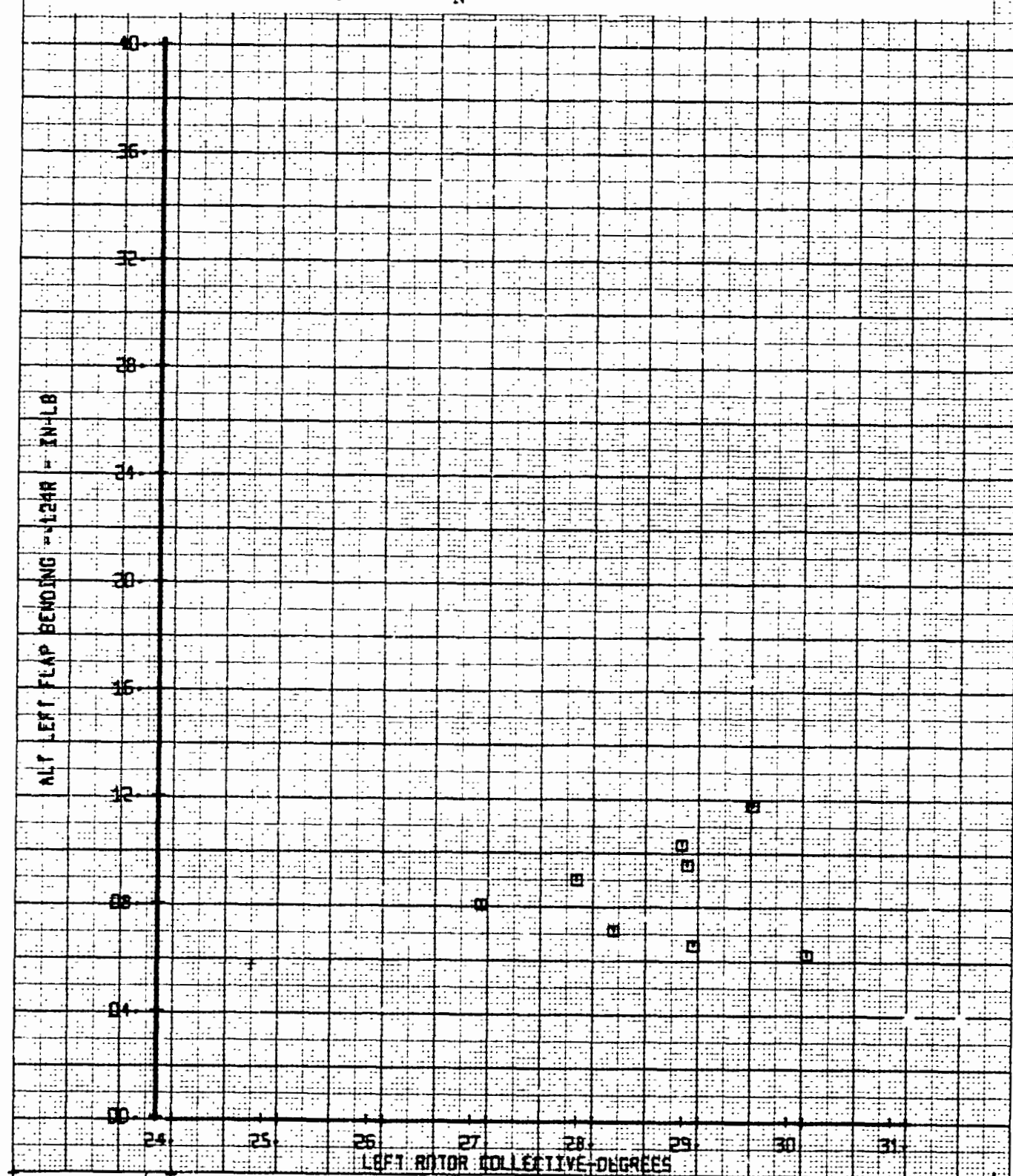






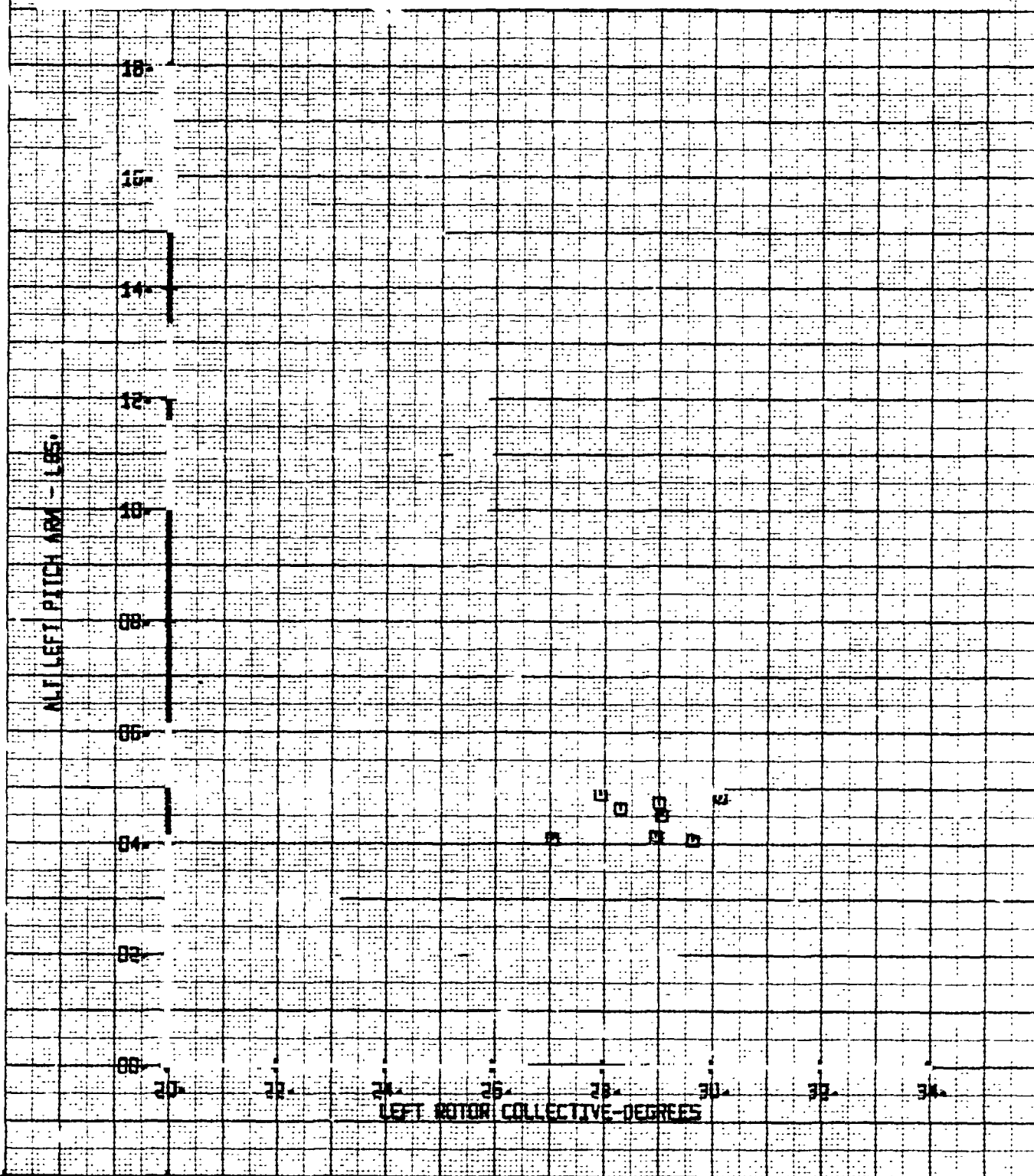
| | | | | | | |
|------------------|----------|--------|-----|--------|------------|--------------|
| BYWT 182 | YR0850-1 | LEGEND | | | | |
| TILT ROTOR MODEL | | SYM | RUN | IN-MAF | KNOTS-F.S. | ALPHA-F.I.S. |
| LEFT ROTOR DATA | | 0 | 100 | 30 | 140 | -3 |
| | | | | | | 31 |

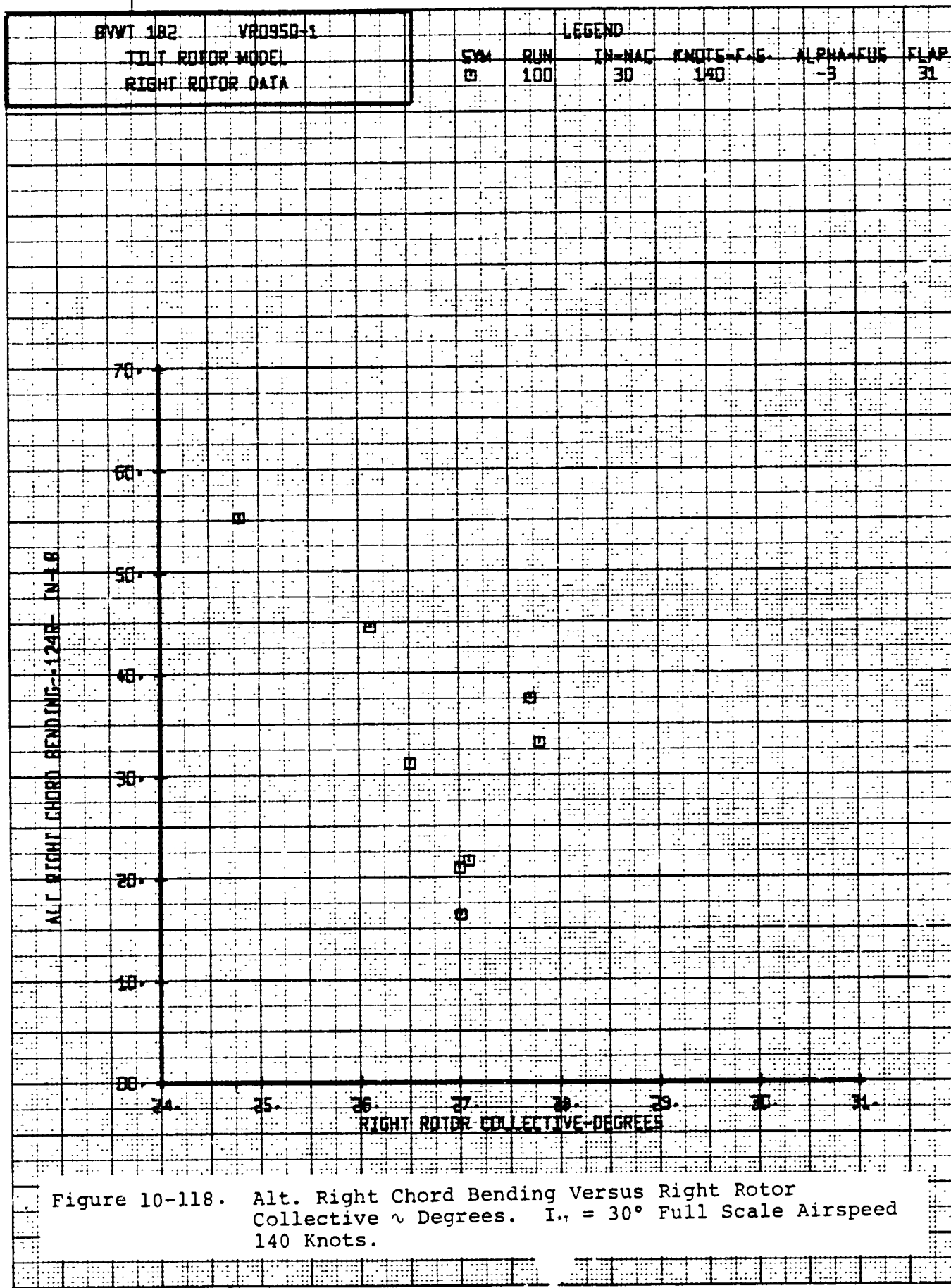
Figure 10-116. Alt. Left Flap Bending Versus Left Rotor Collective
~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.



| | | | | | | |
|------------------|----------|--------|-----|--------|-----------|-----------|
| BVWT 182 | VR0950-1 | LEGEND | | | | |
| LEFT ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-F-5 | ALPHA-FUS |
| LEFT ROTOR DATA | | 0 | 103 | 30 | 140 | -3 |
| | | | | | | FLAP 31 |

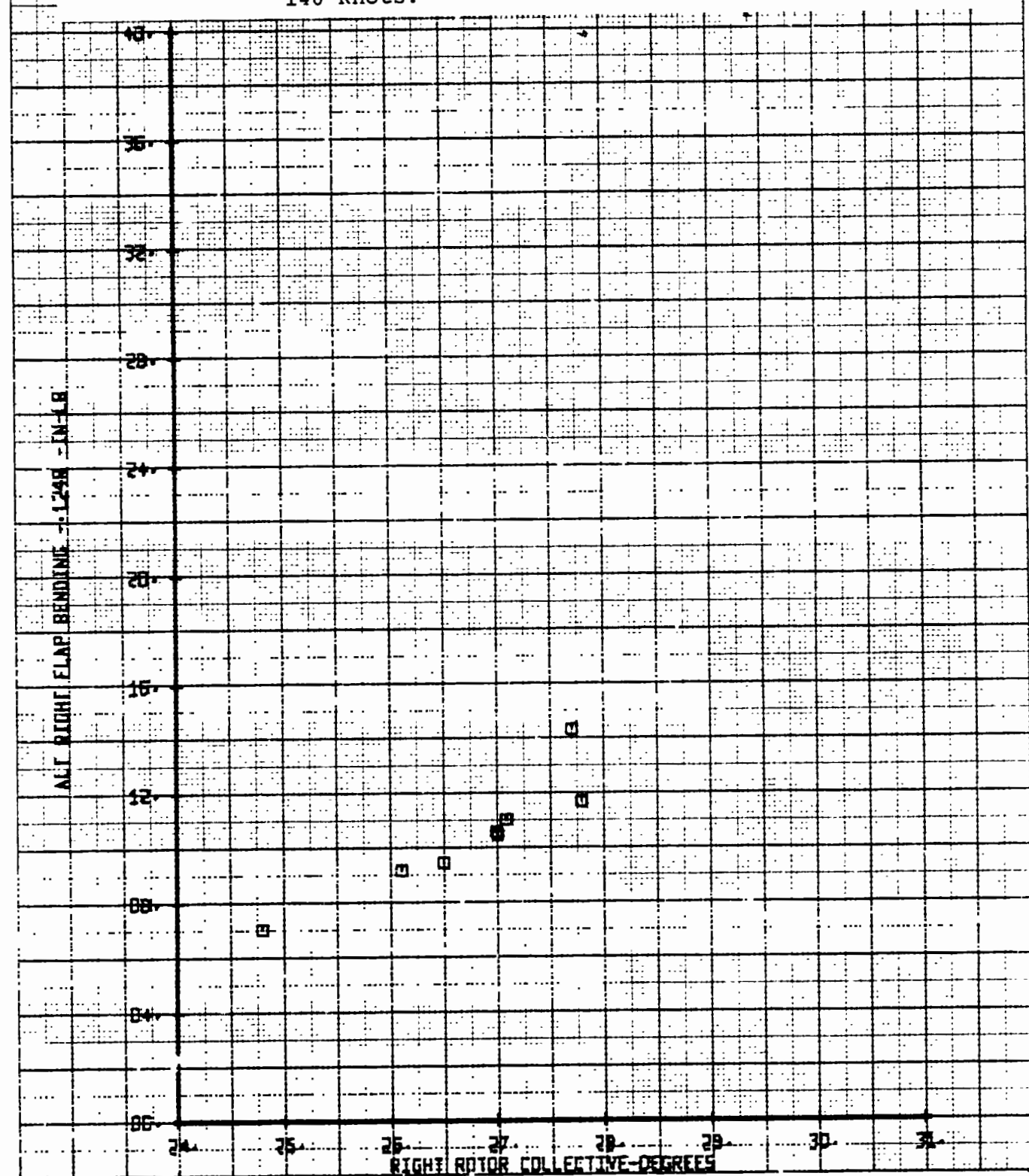
Figure 10-117. Alt. Left Pitch Link Load Versus Left Rotor Collective ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.





| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | VR0950-1 | LEGEND | | | | |
| TILT ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-F.E. | ALPHA-FUE |
| RIGHT ROTOR DATA | | □ | 100 | 30 | 140 | -3 |
| | | | | | | CLAP 31 |

Figure 10-119. Alt. Right Flap Bending Versus Right Rotor Collective ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.



BVWT 182 YR0950-1

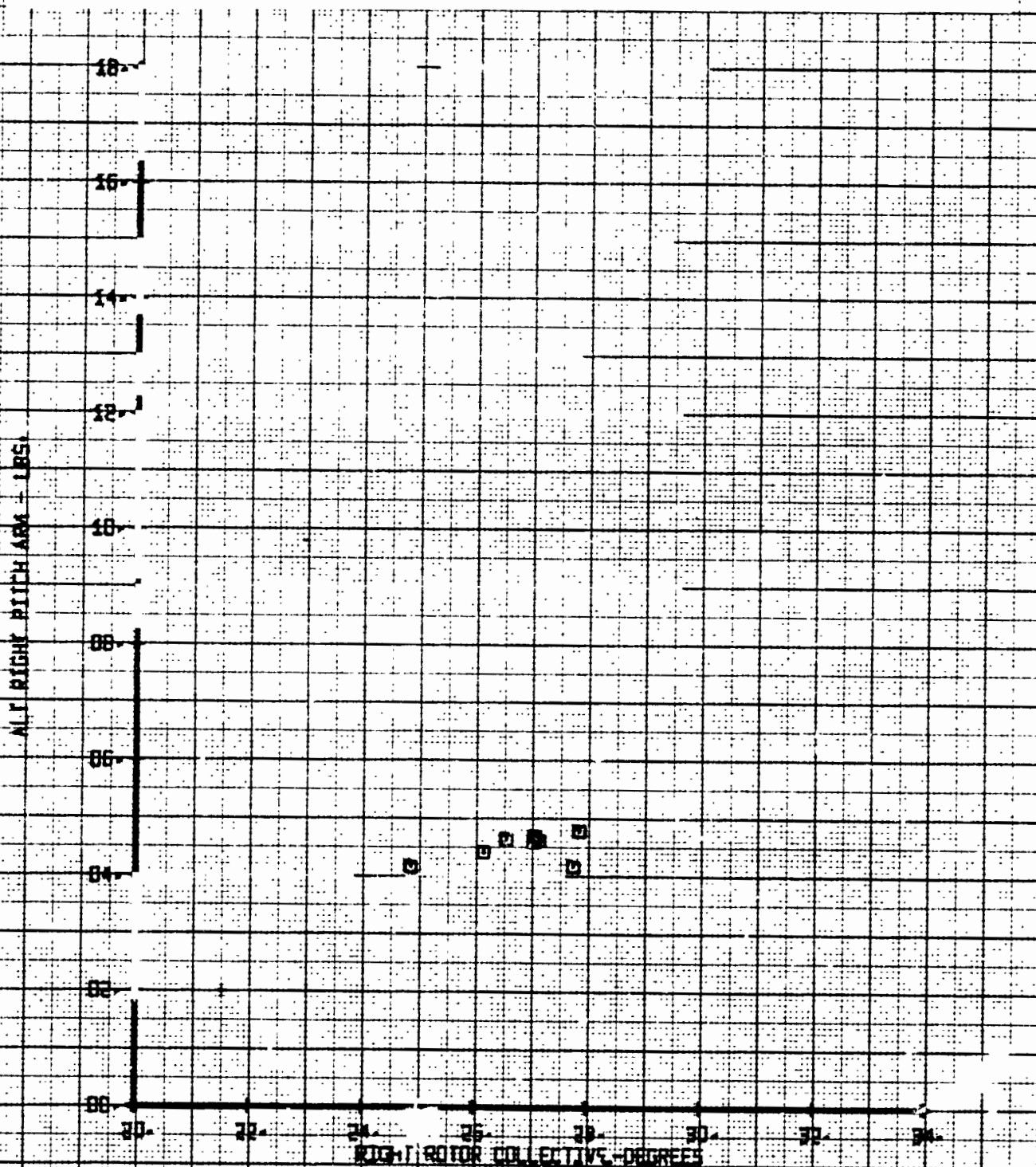
TILT ROTOR MODEL

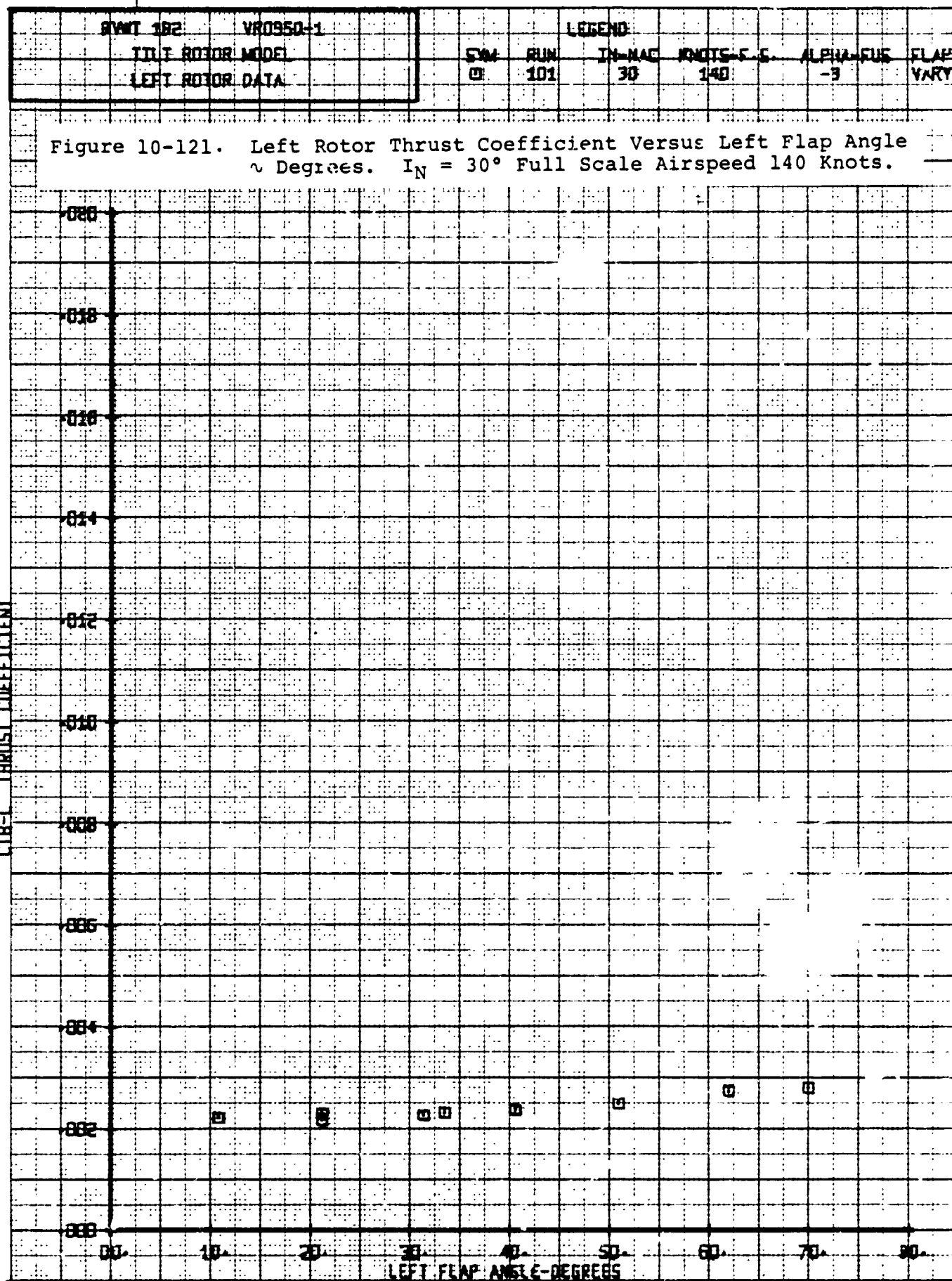
RIGHT ROTOR DATA

LEGEND

| SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FUS | FLAP |
|-----|-----|--------|------------|-----------|------|
| 0 | 100 | 30 | 140 | -3 | 31 |

Figure 10-120. Alt. Right Pitch Link Load Versus Right Rotor Collective ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.





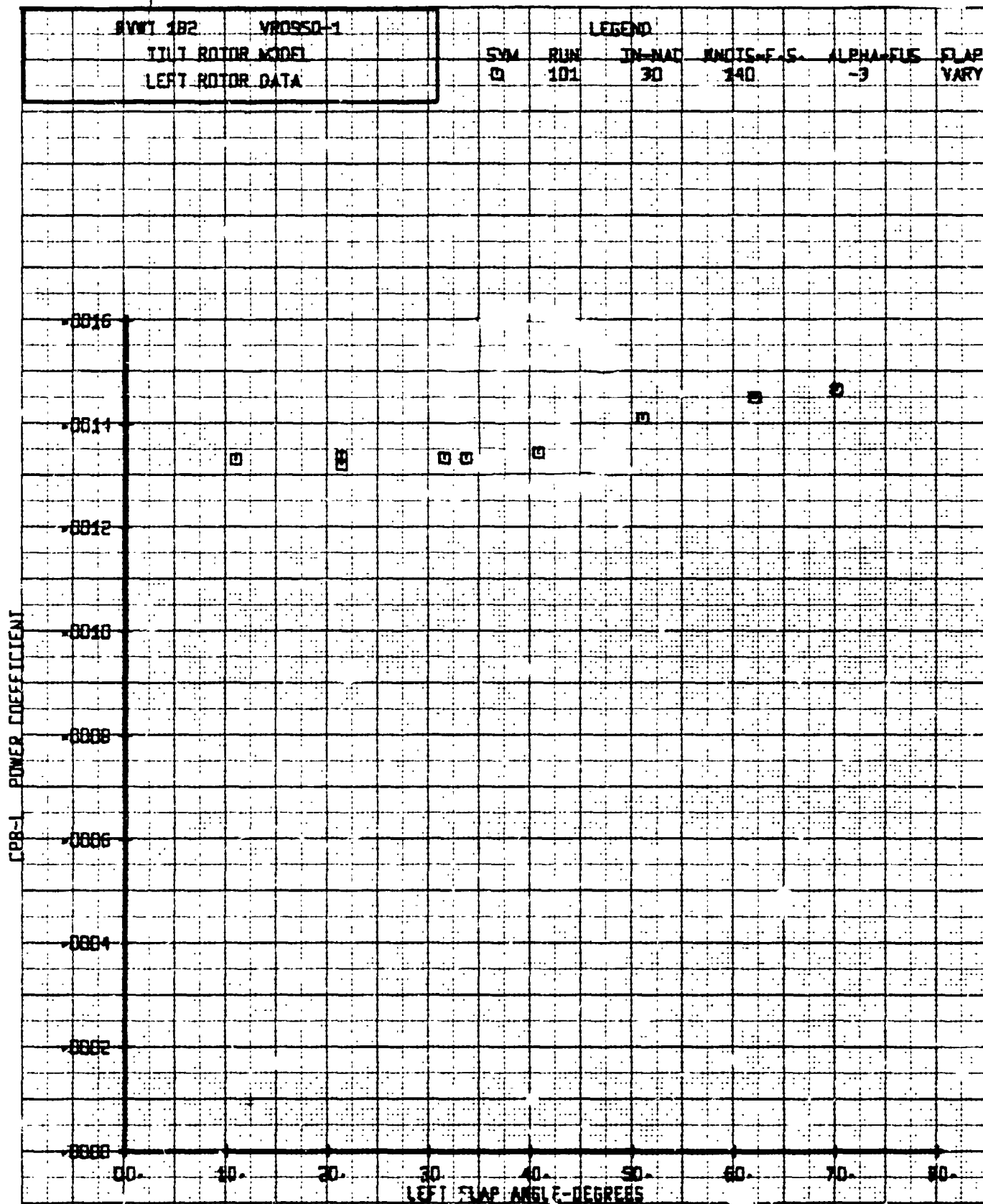
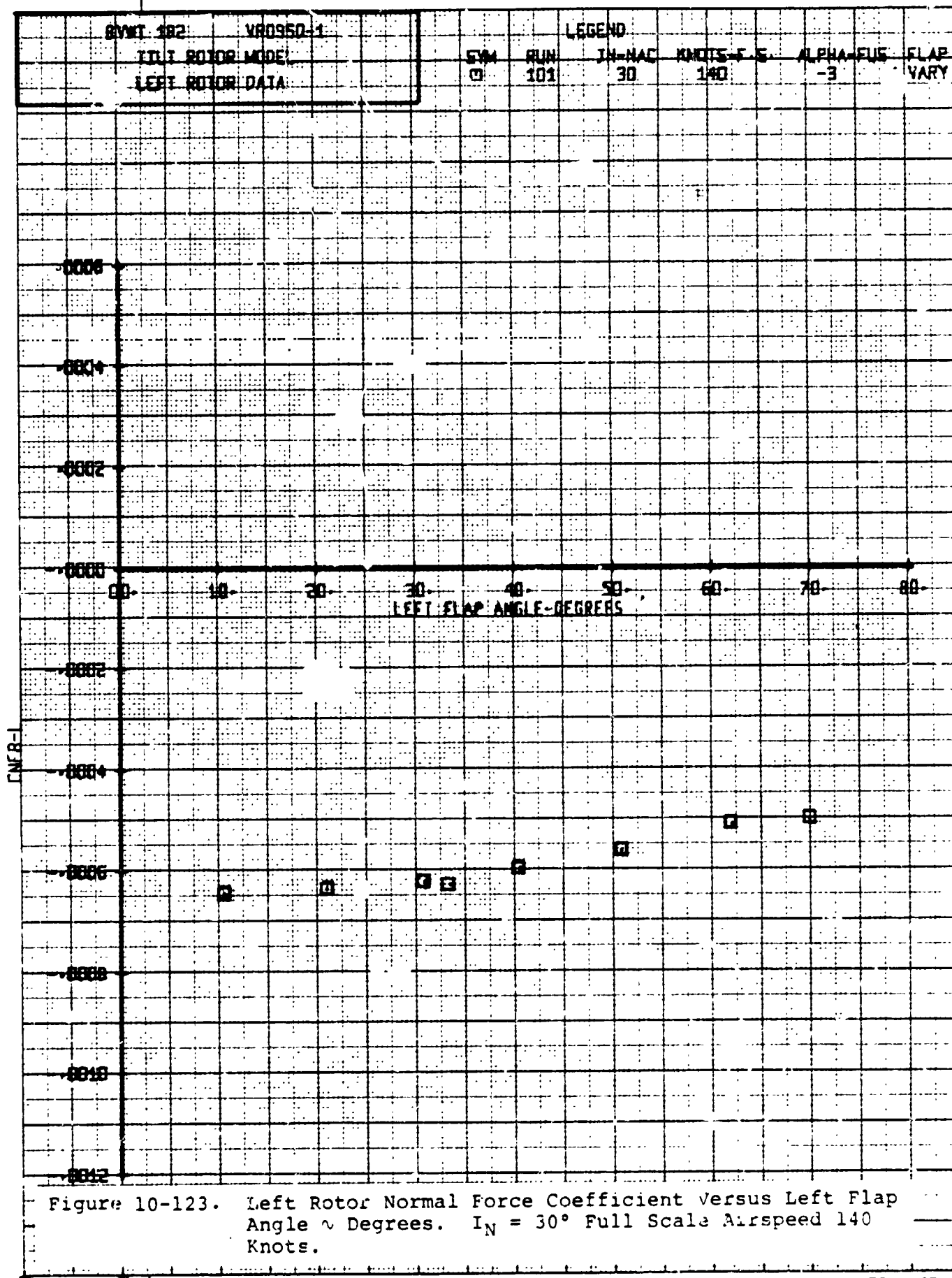
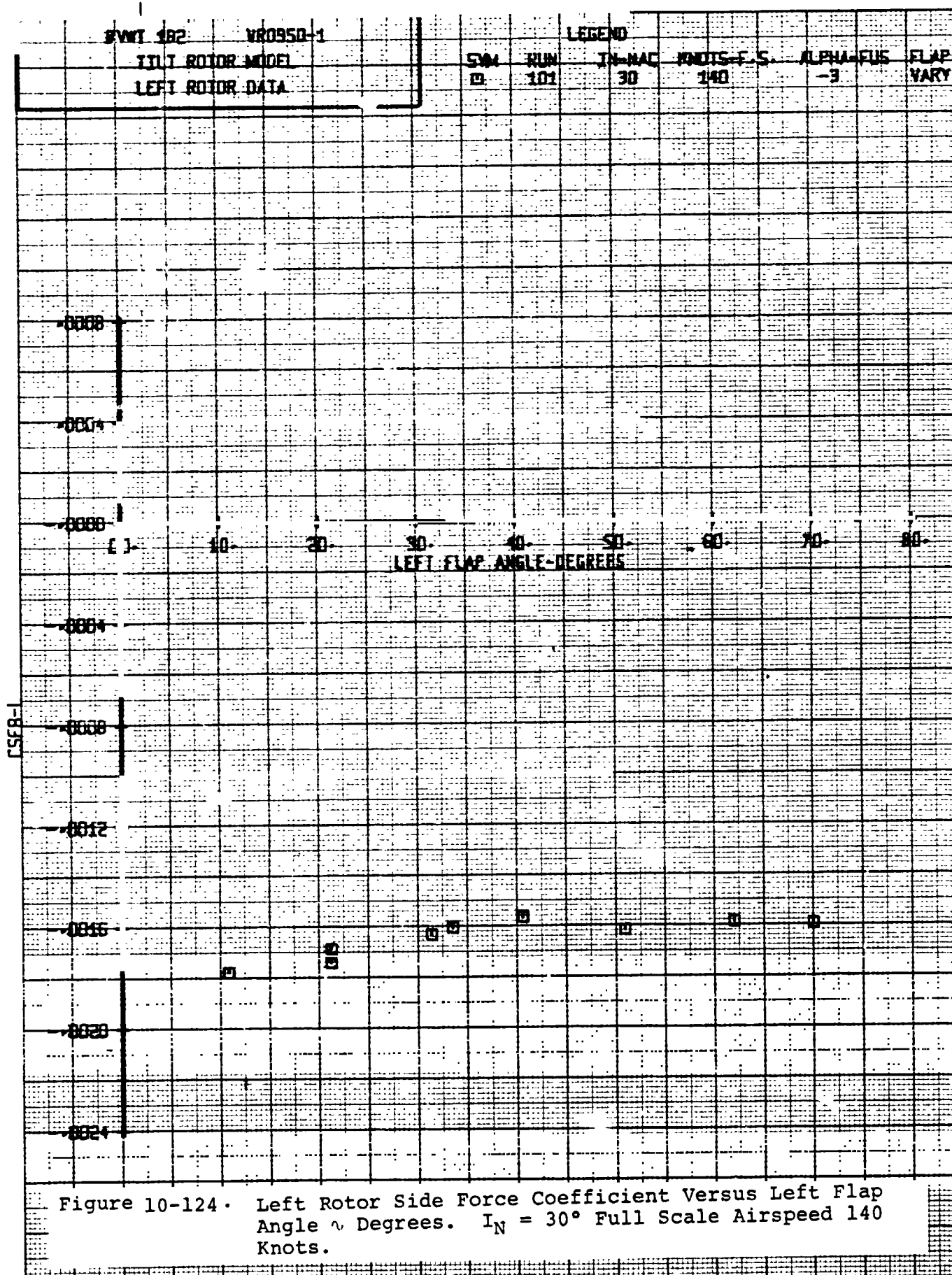


Figure 10-122. Left Rotor Power Coefficient Versus Left Angle Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.





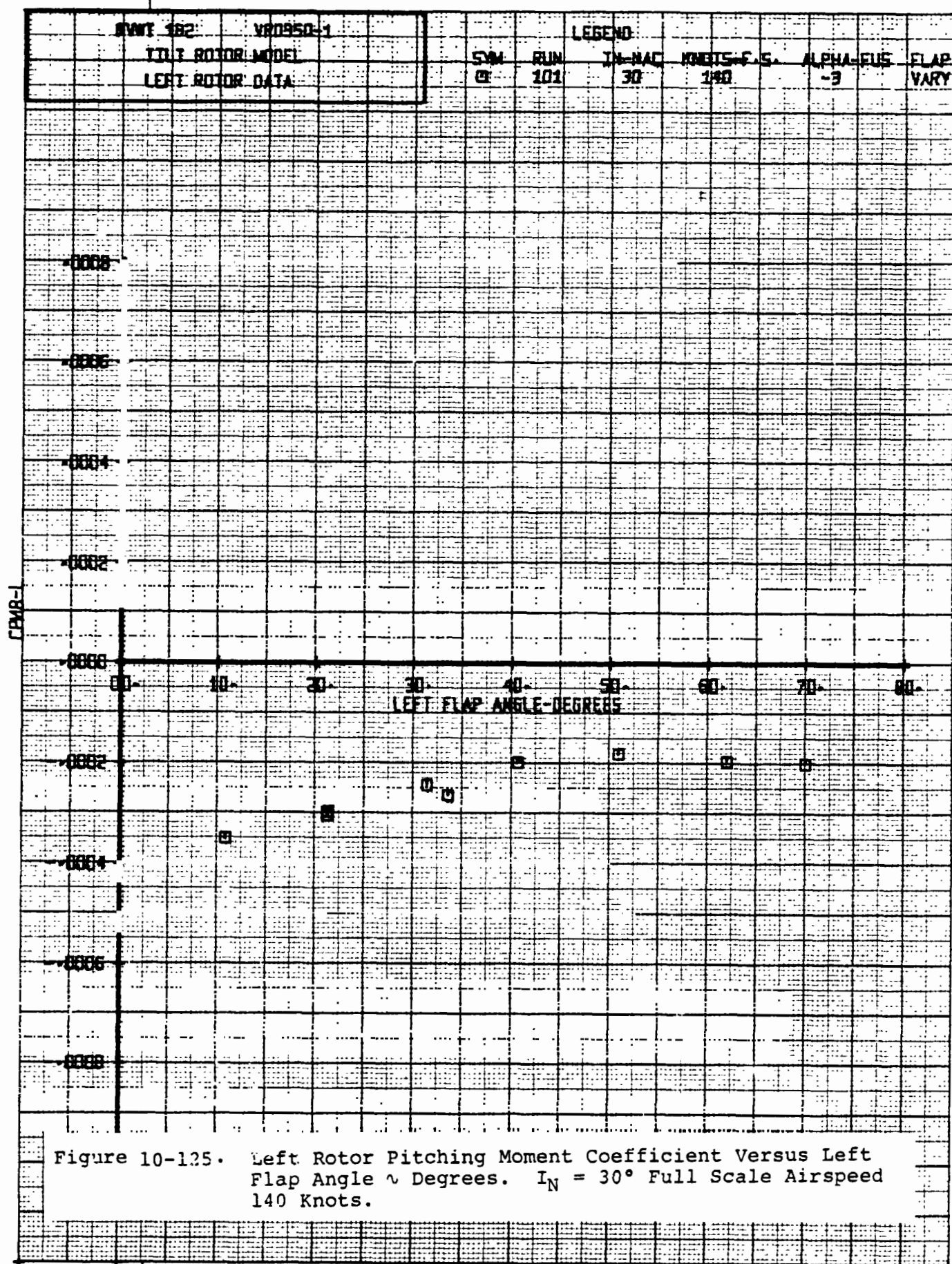
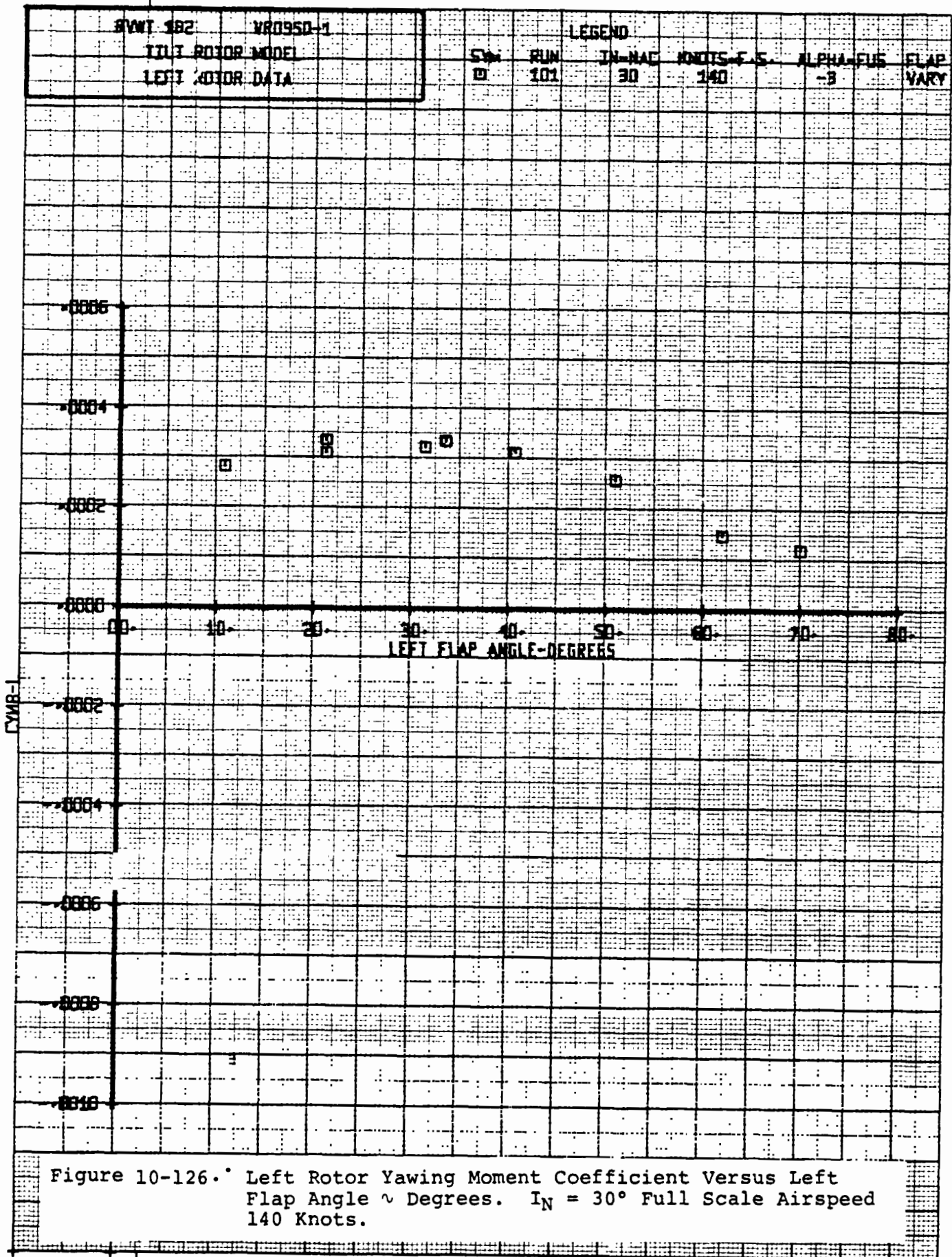
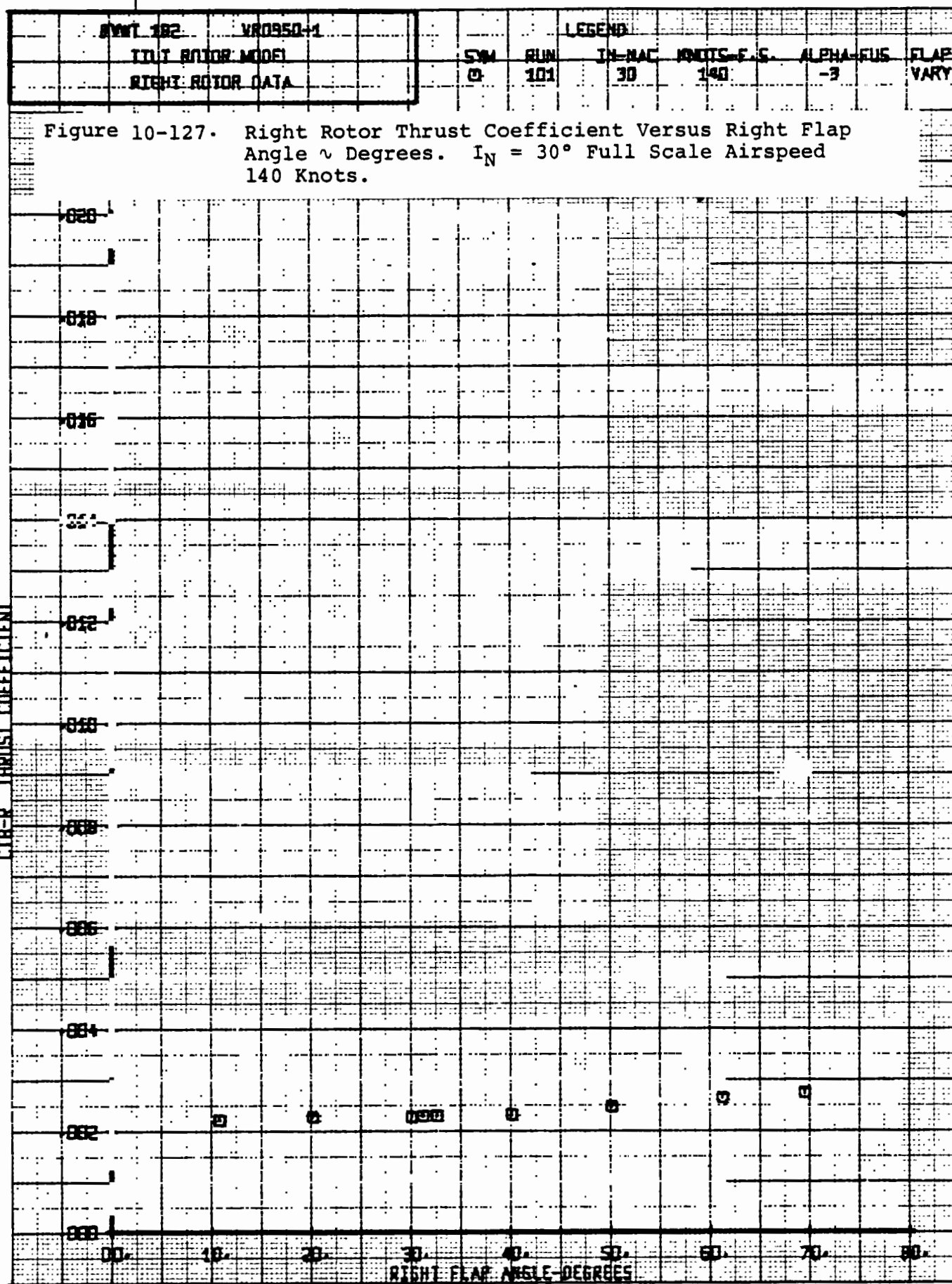


Figure 10-125. Left Rotor Pitching Moment Coefficient Versus Left Flap Angle ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.





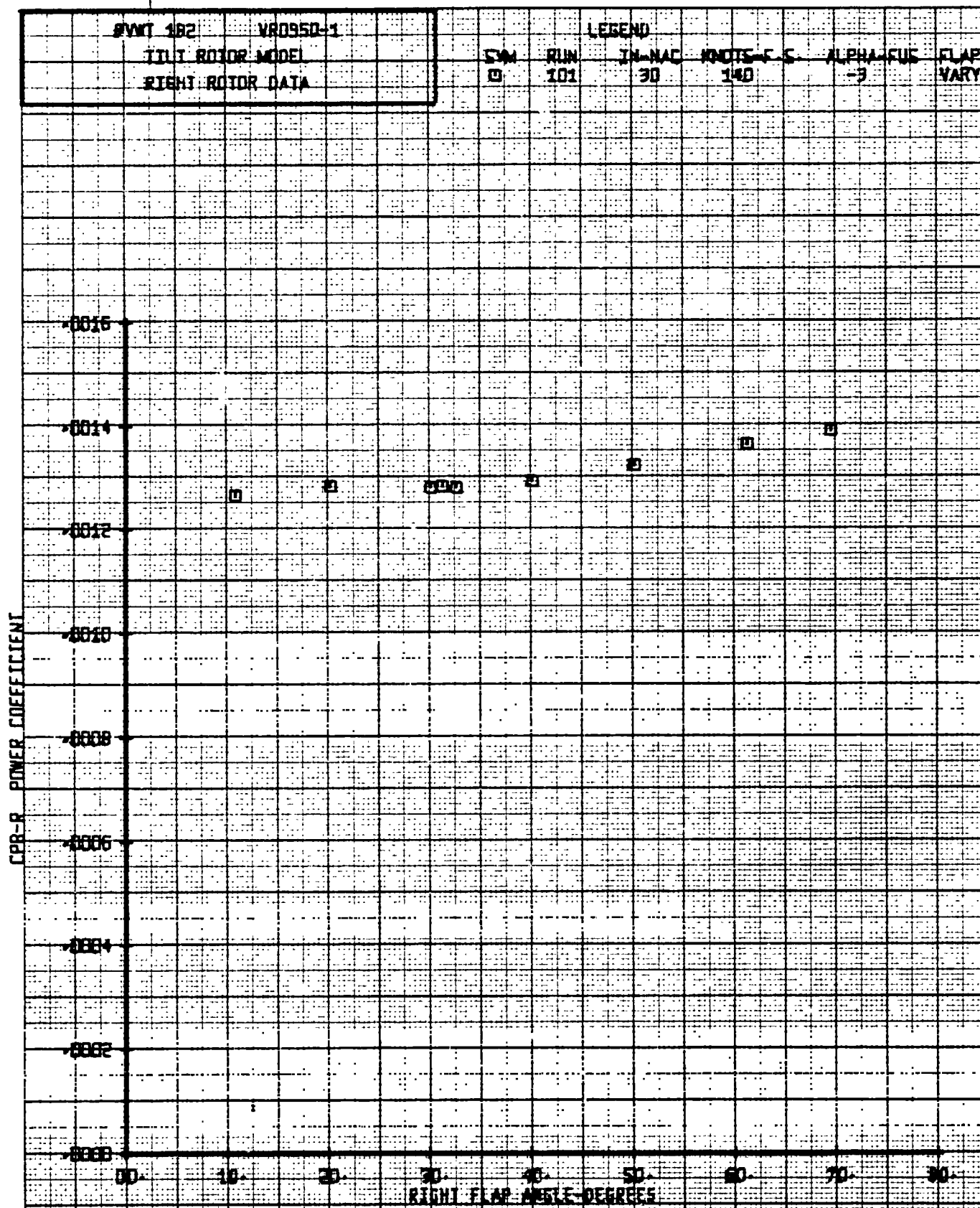
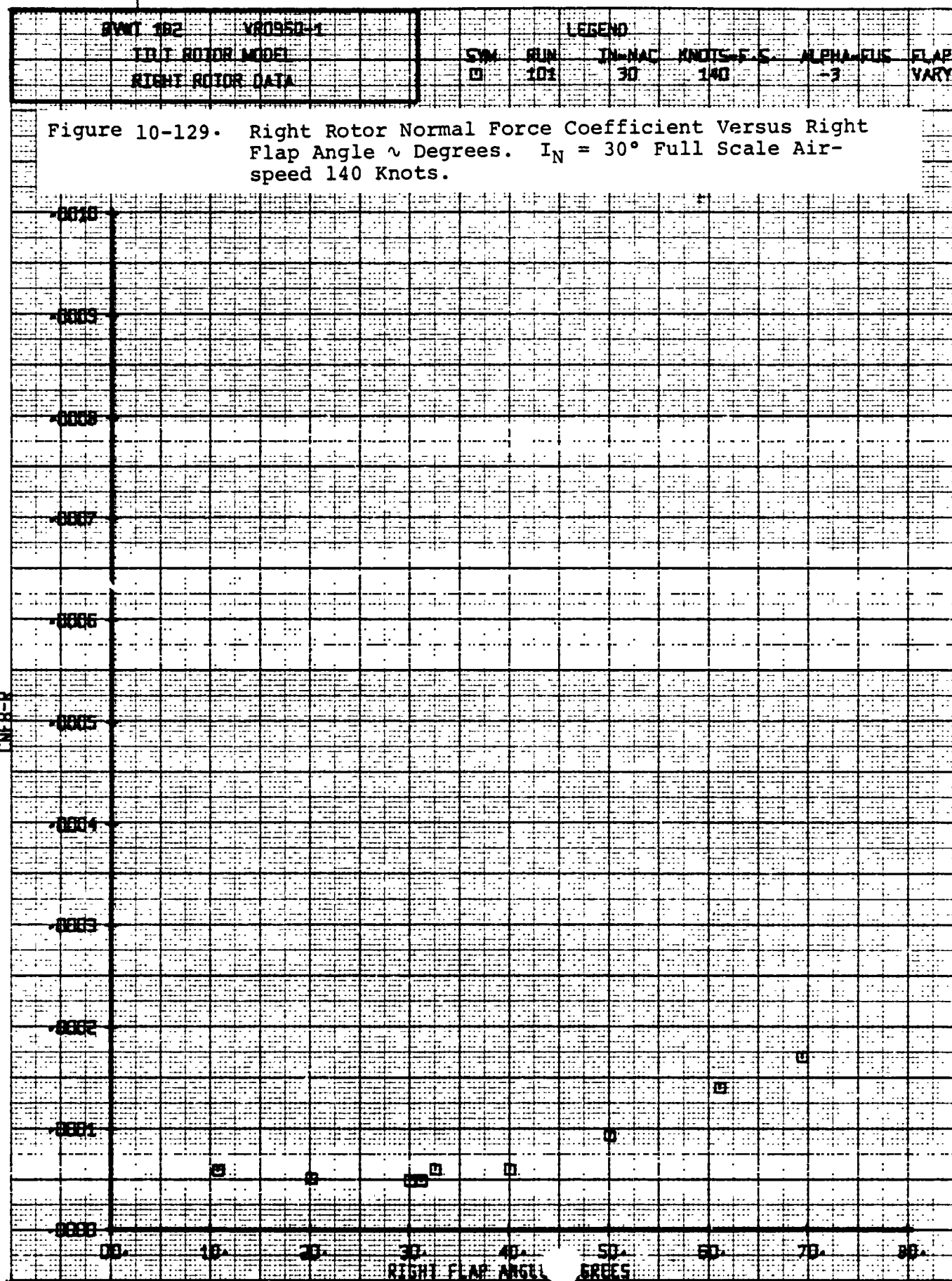
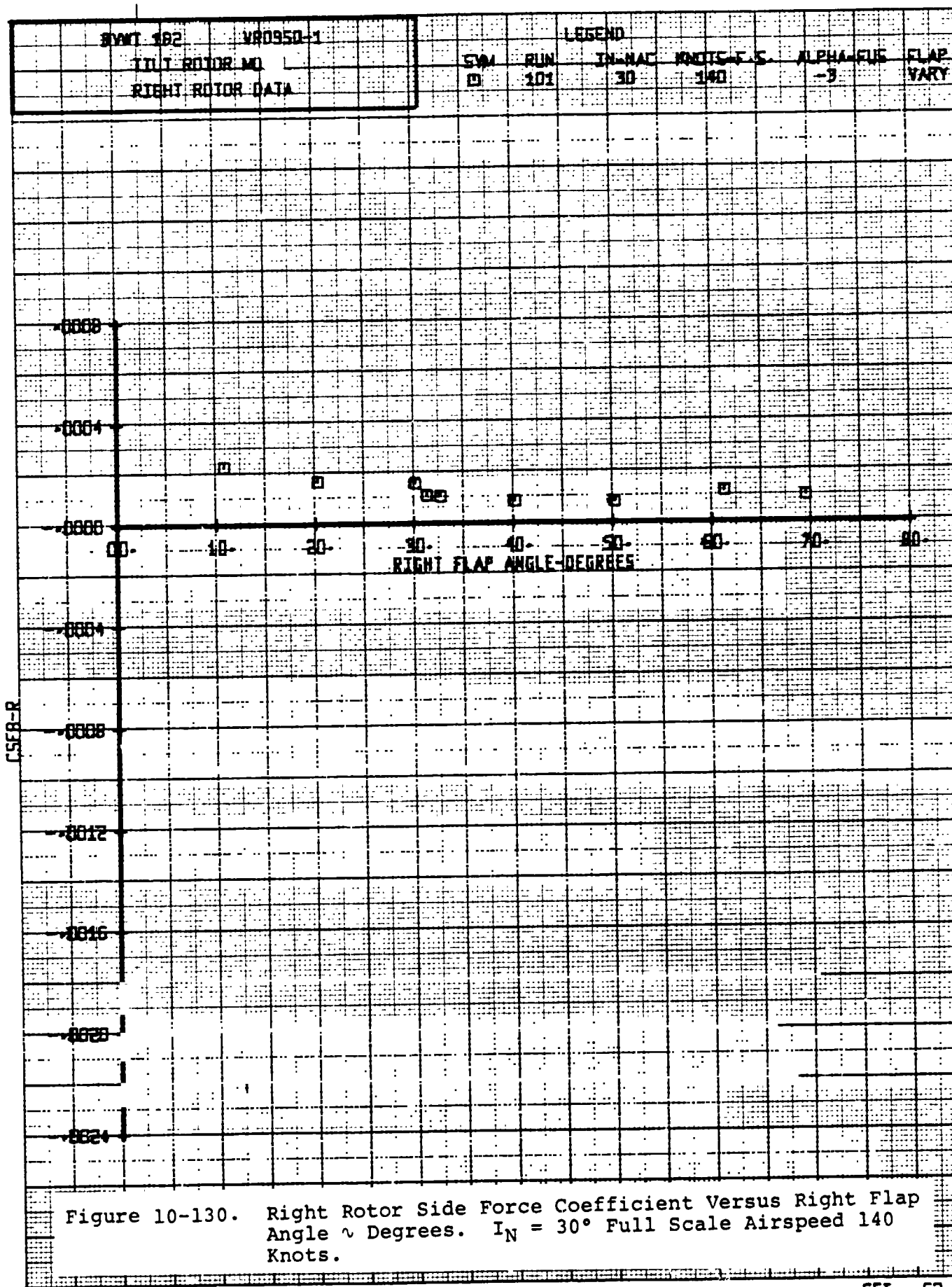
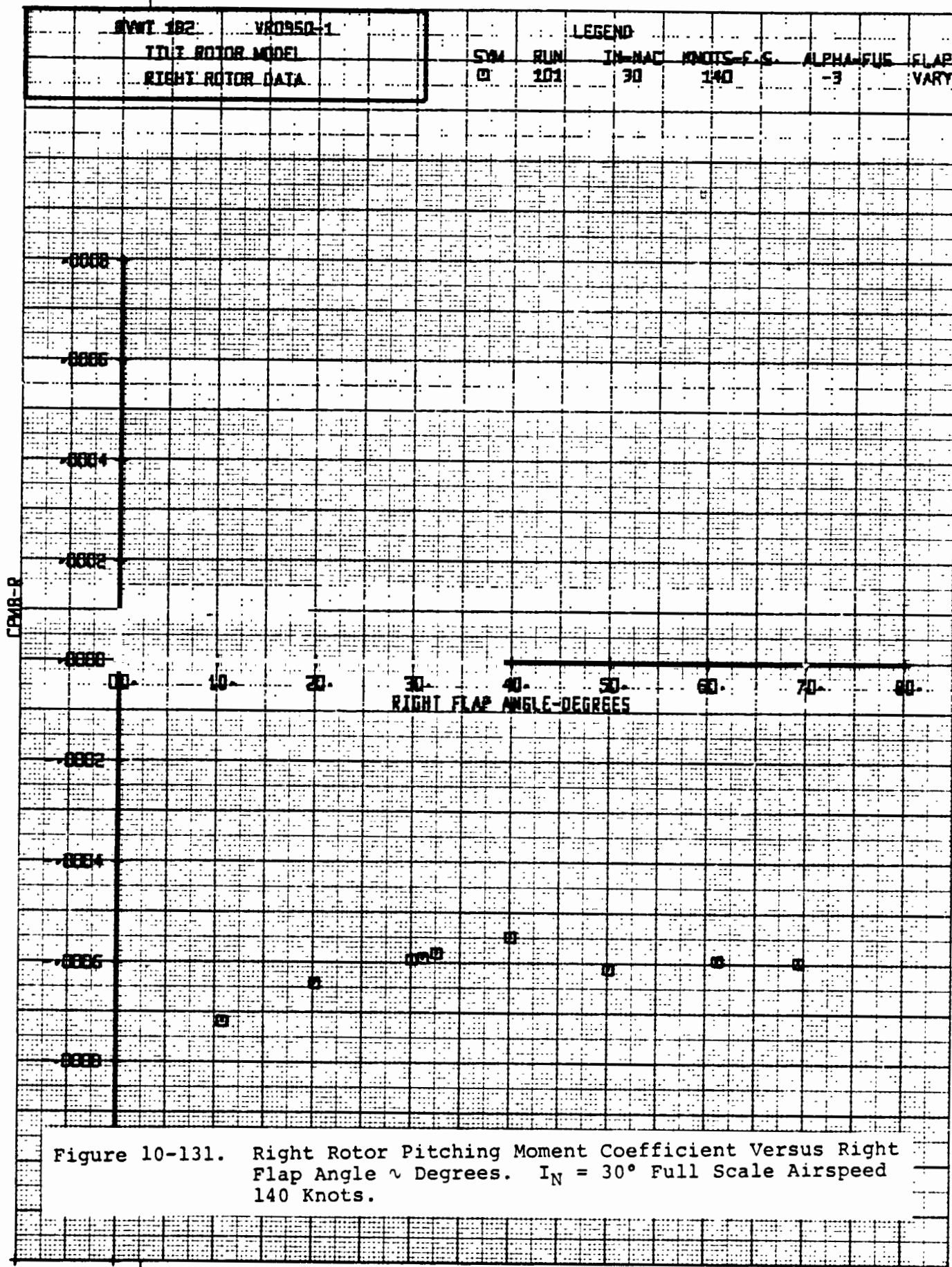
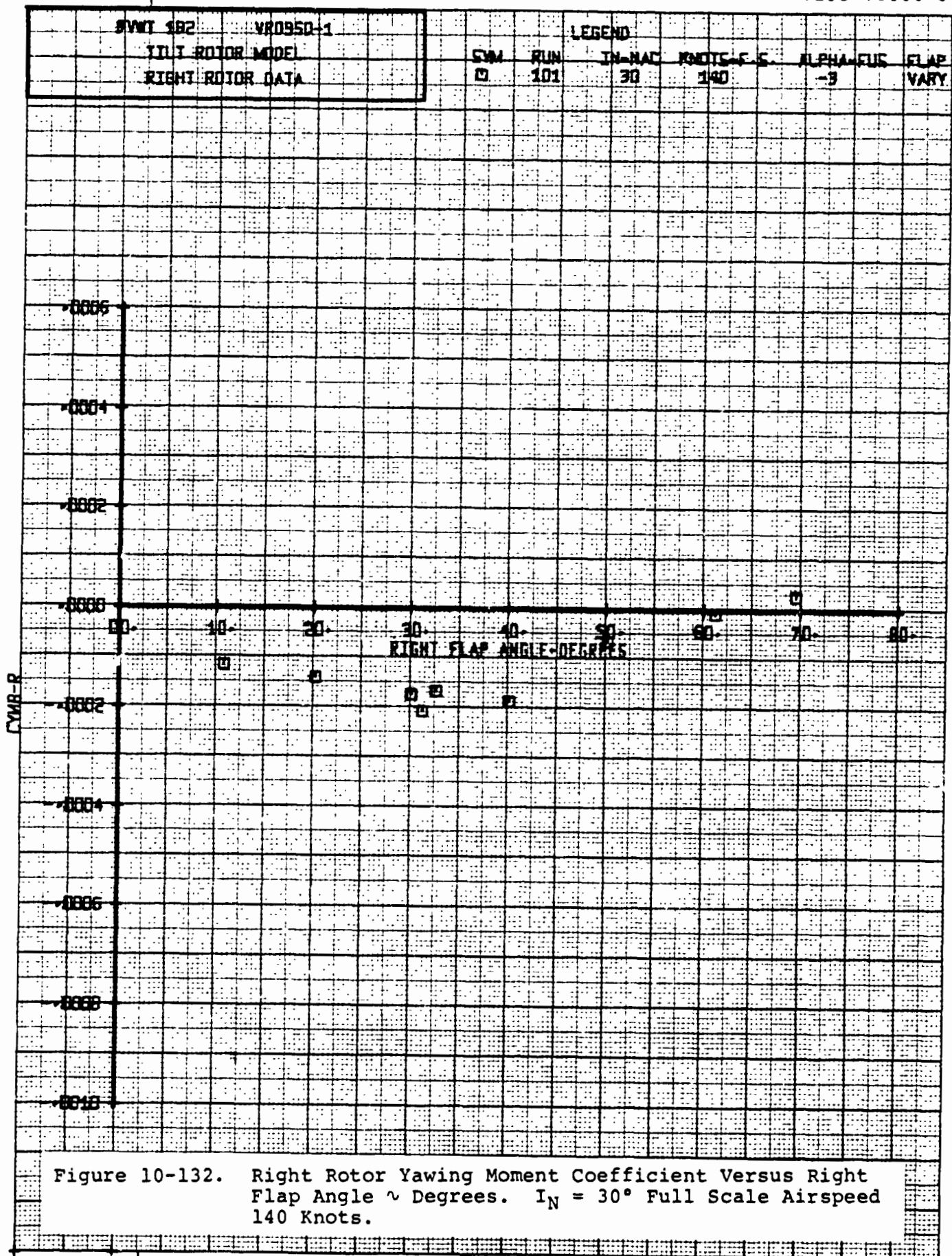


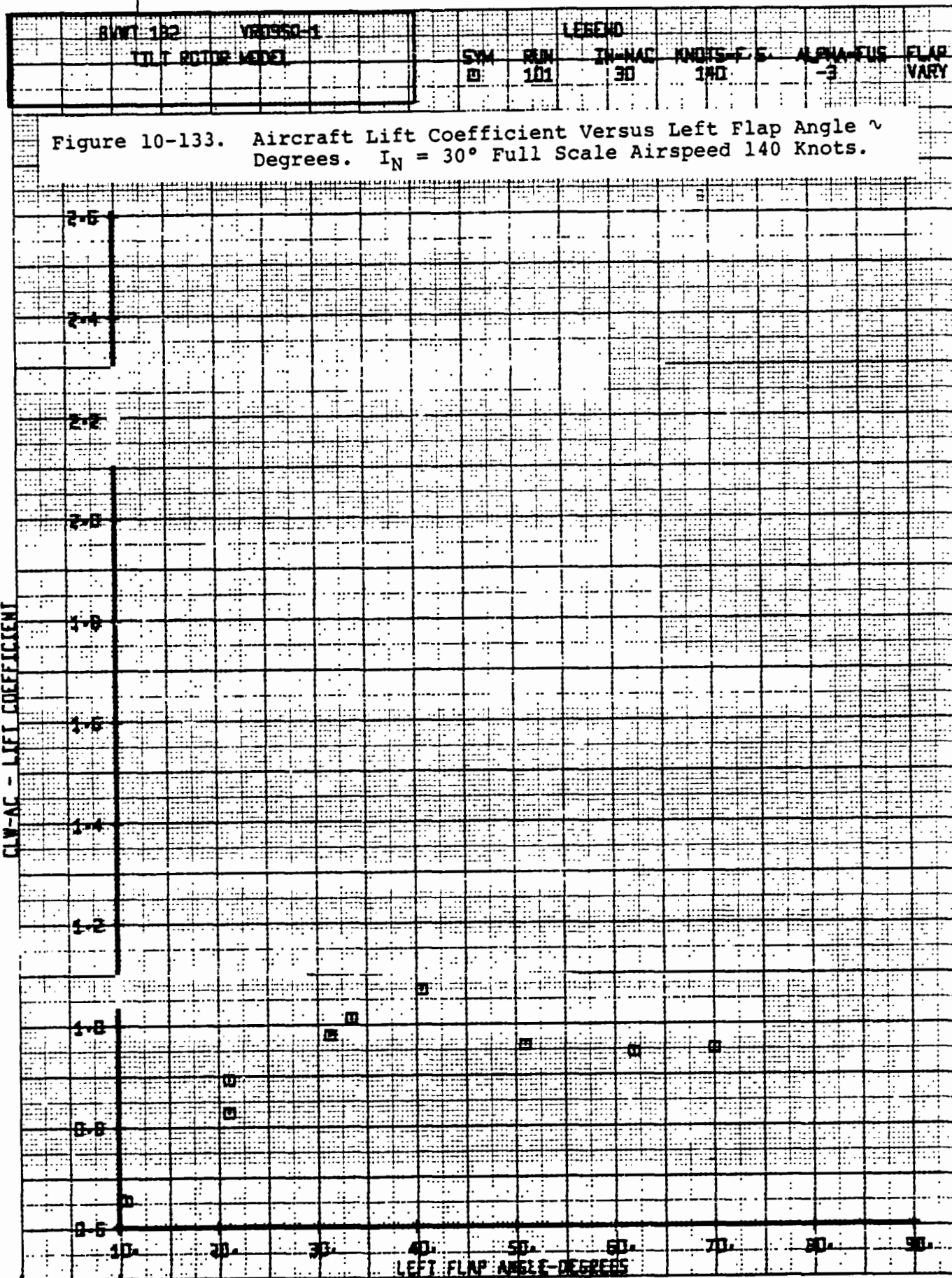
Figure 10-128. Right Rotor Power Coefficient Versus Right Flap Angle ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.

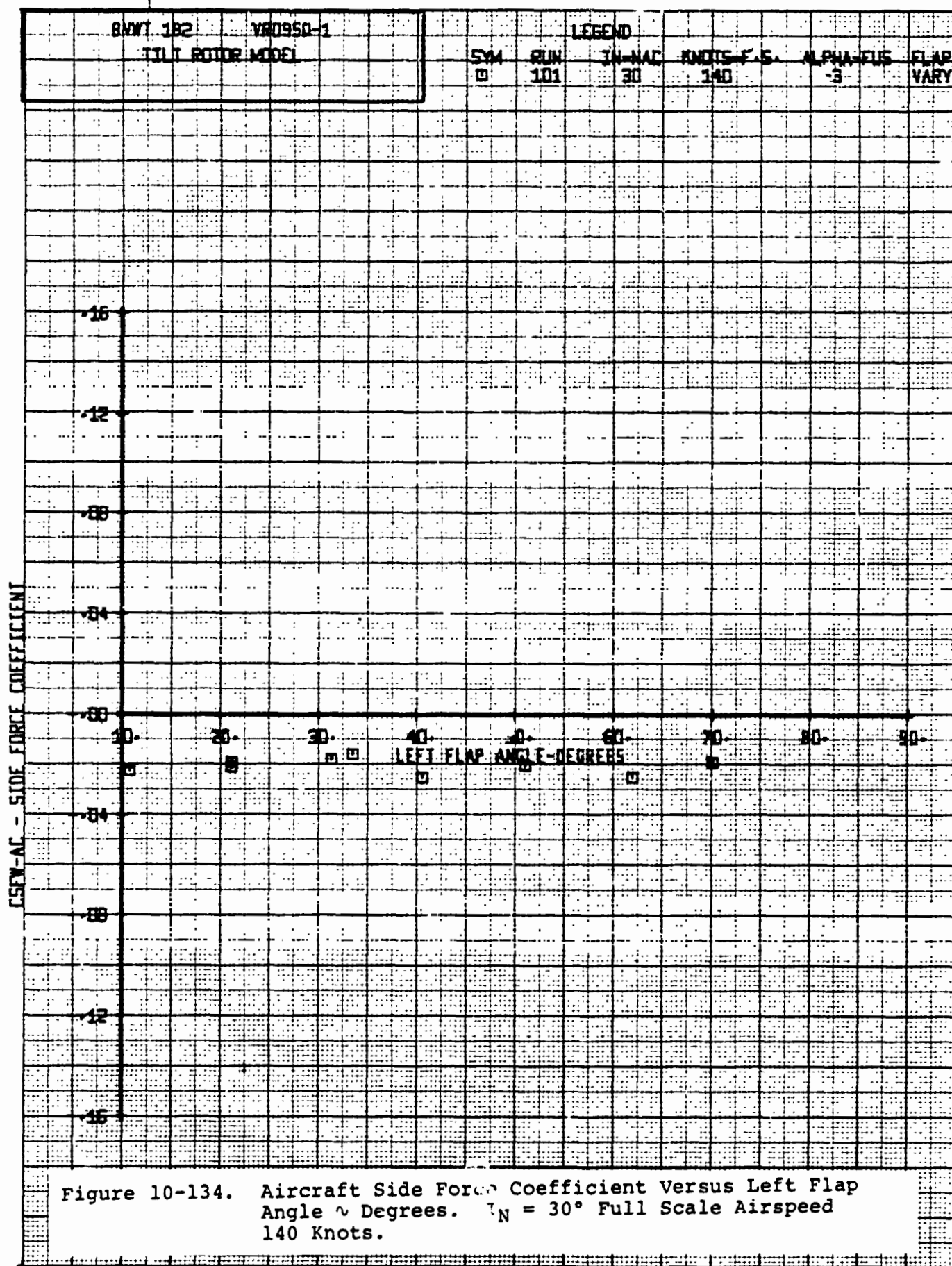


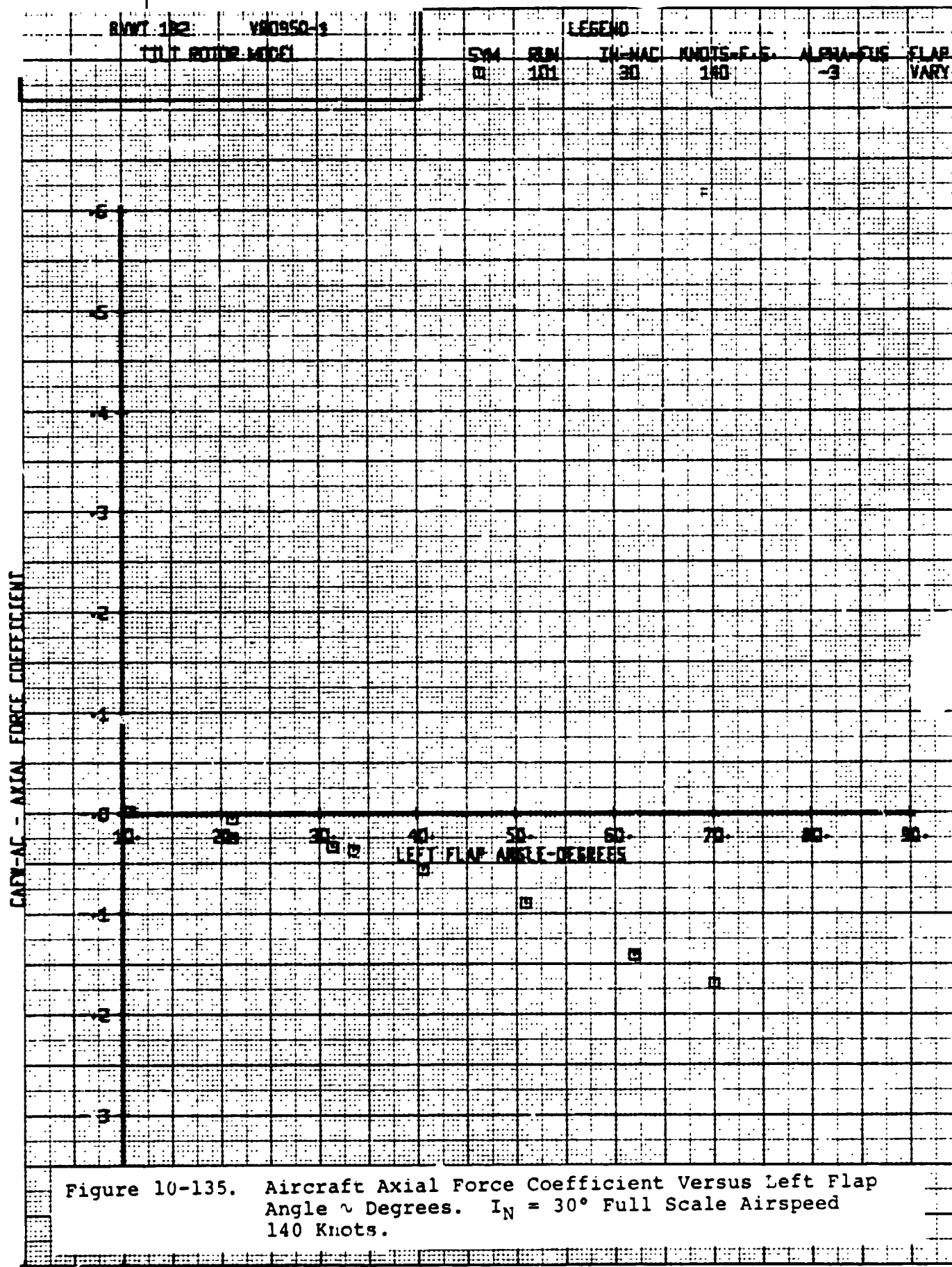


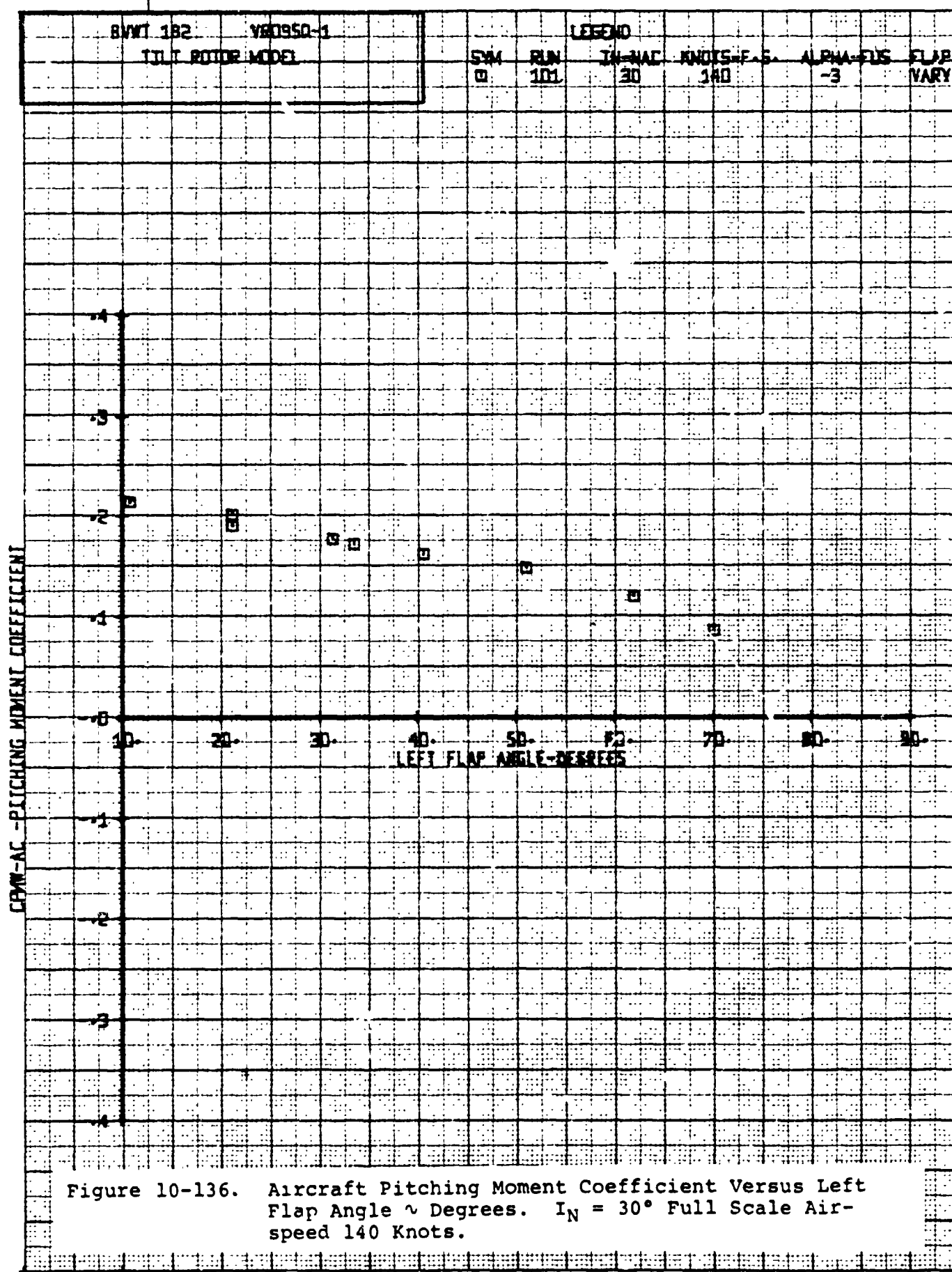


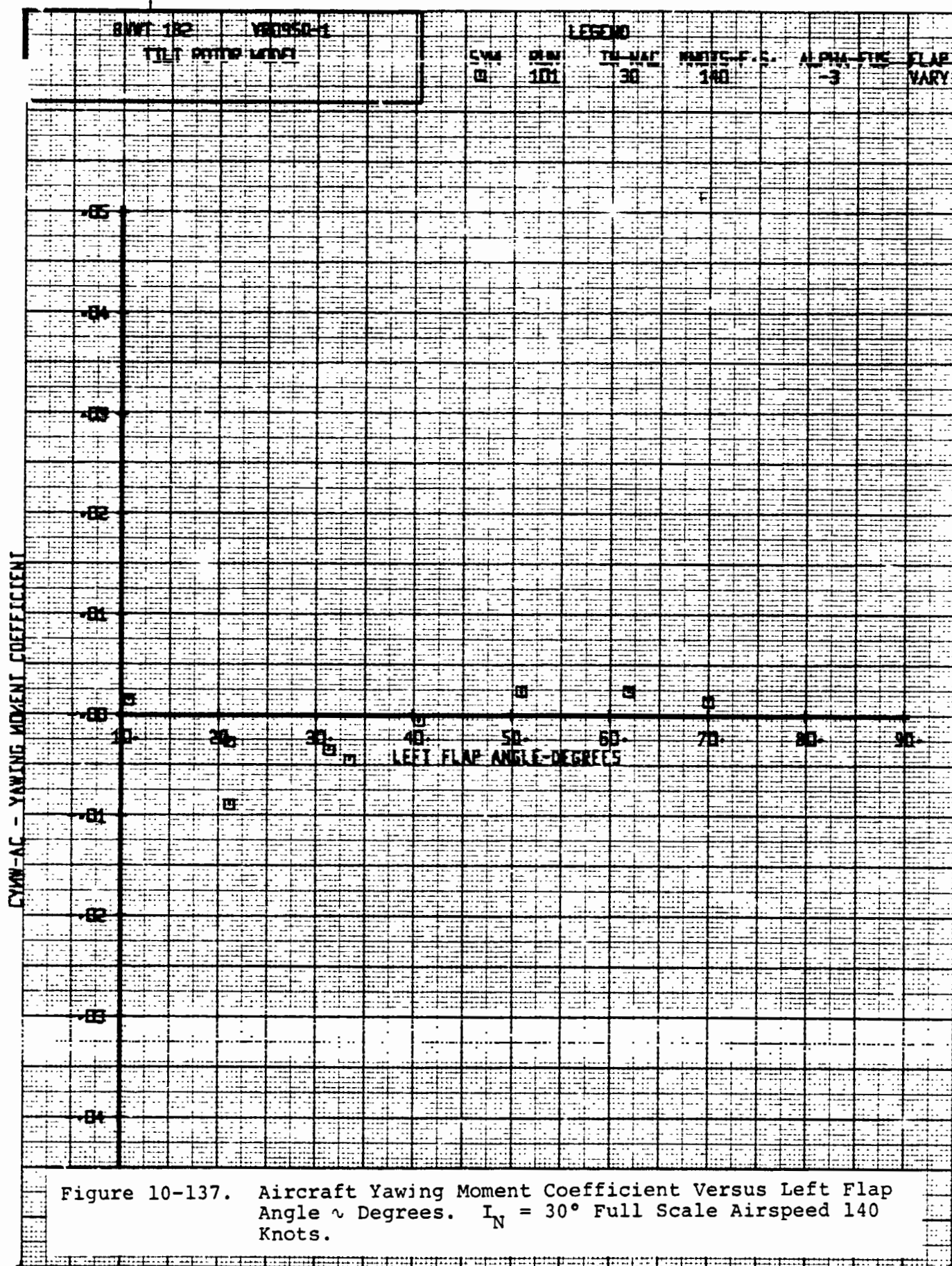


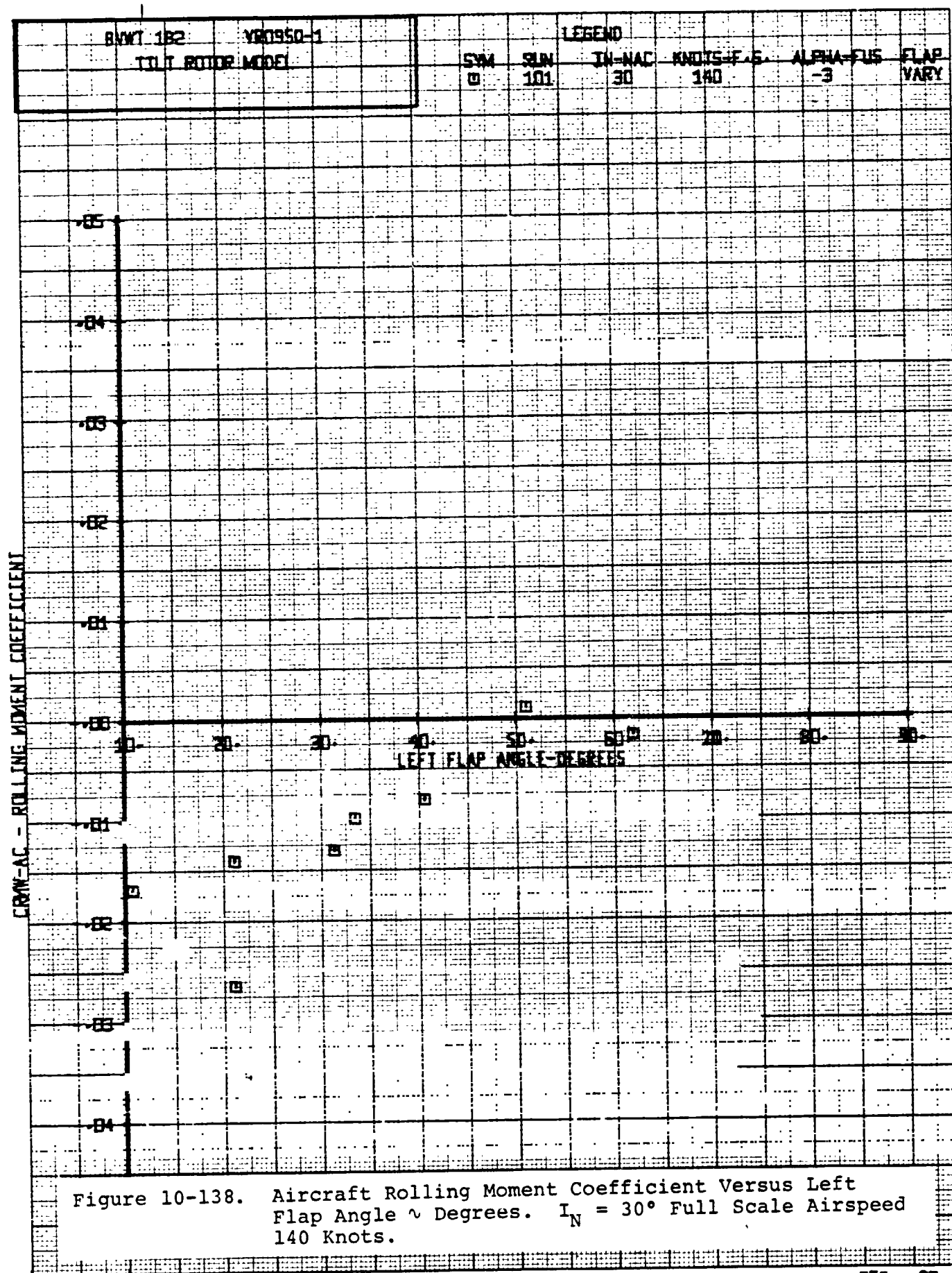


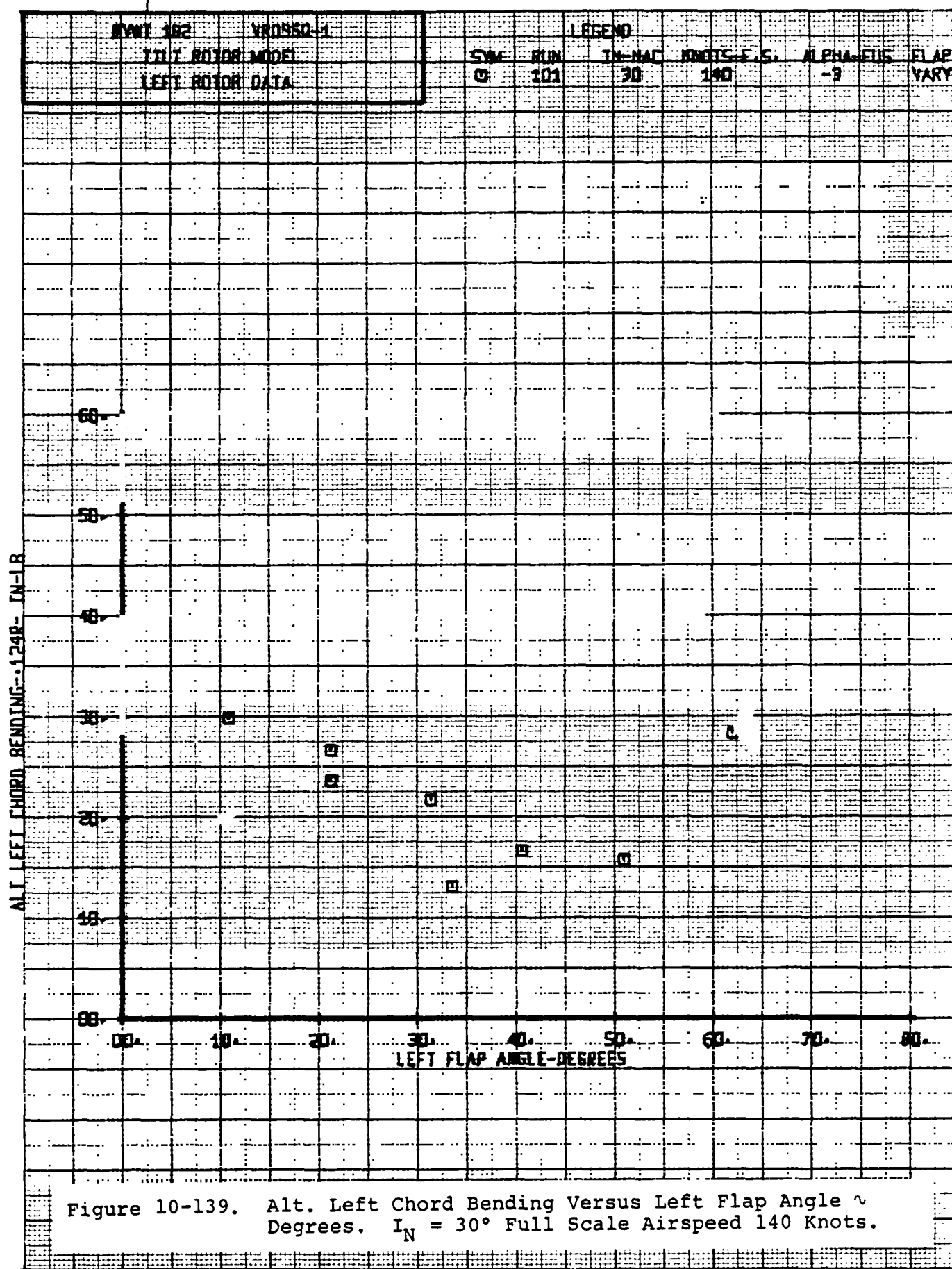


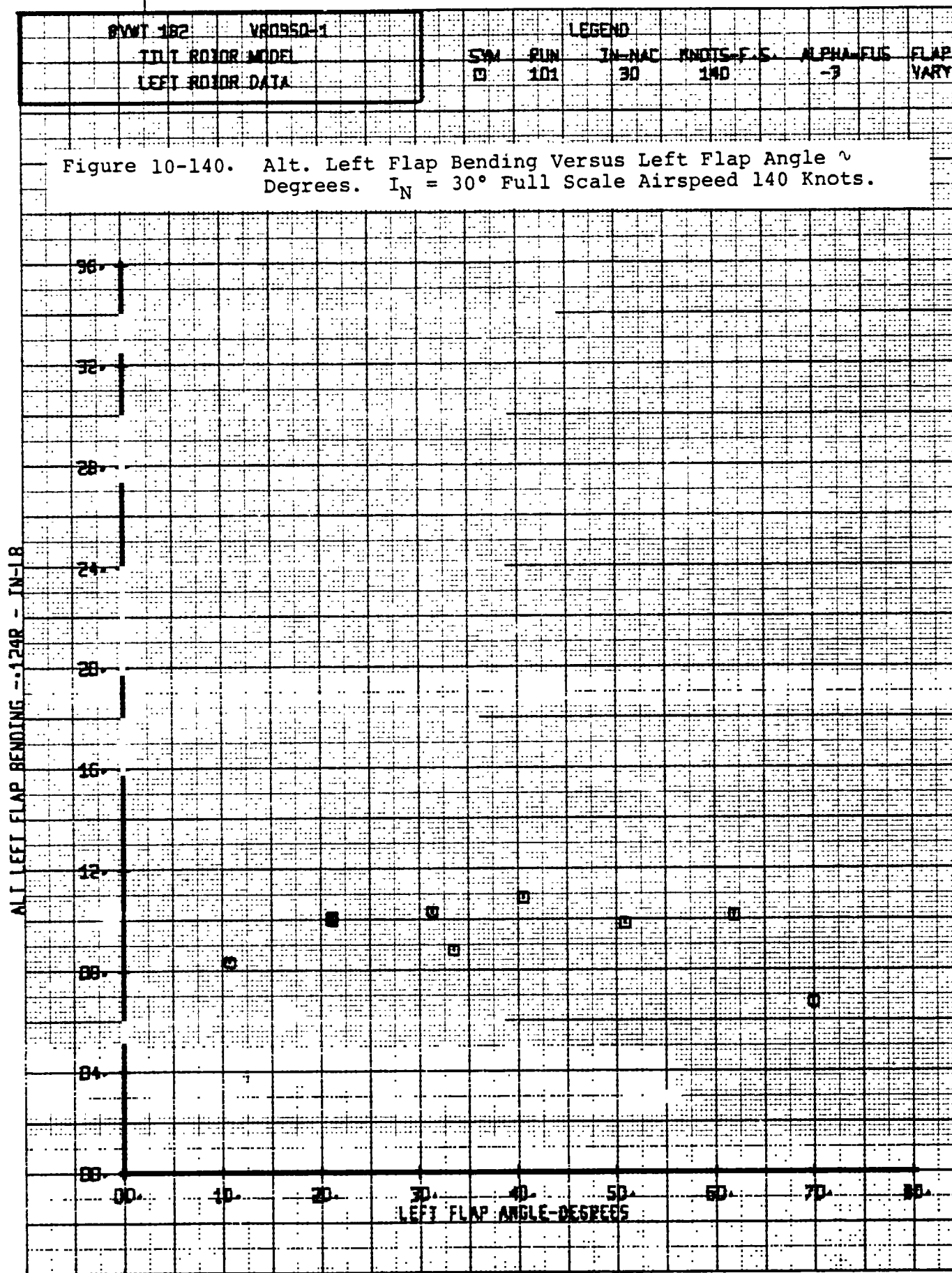


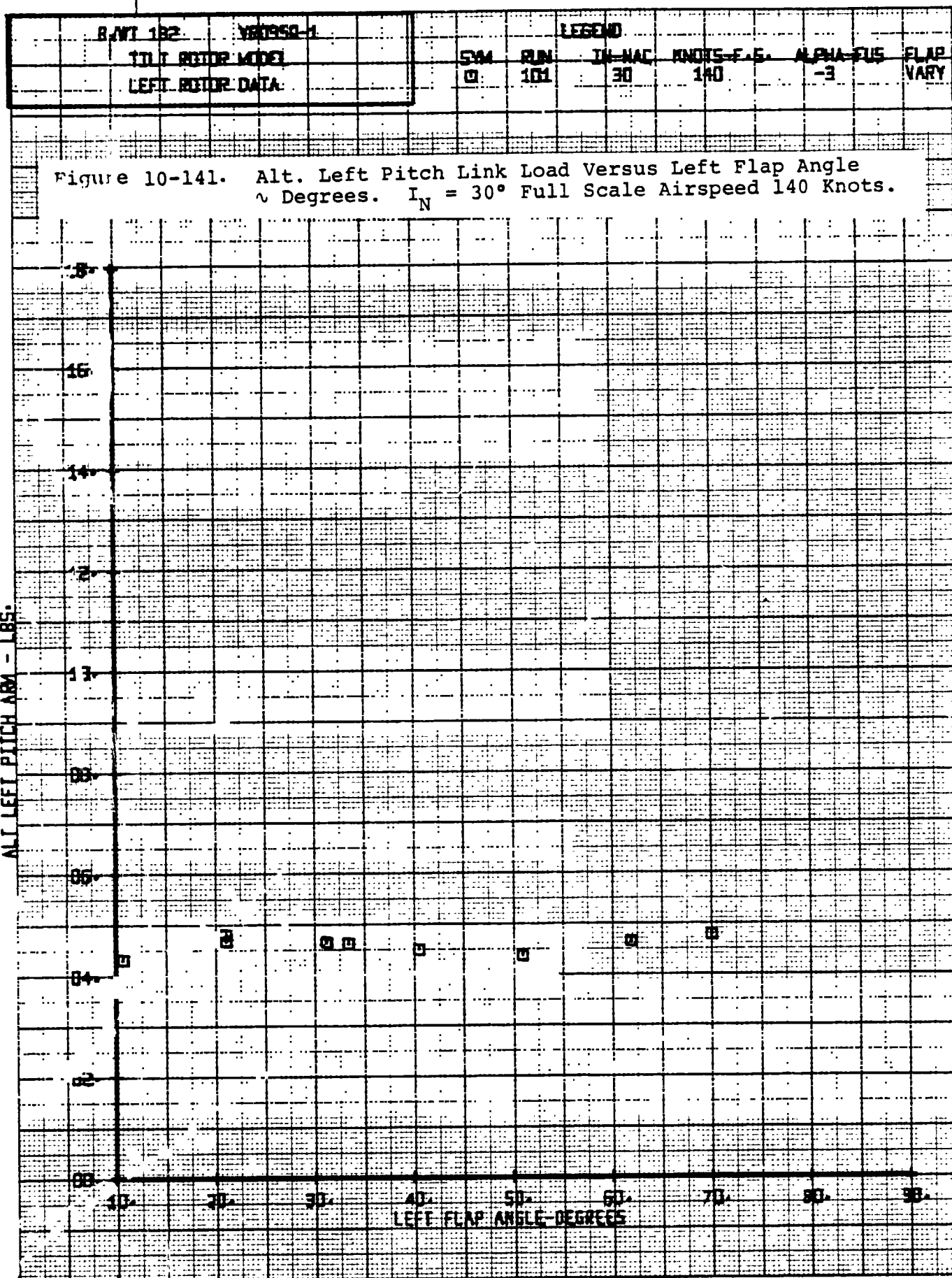












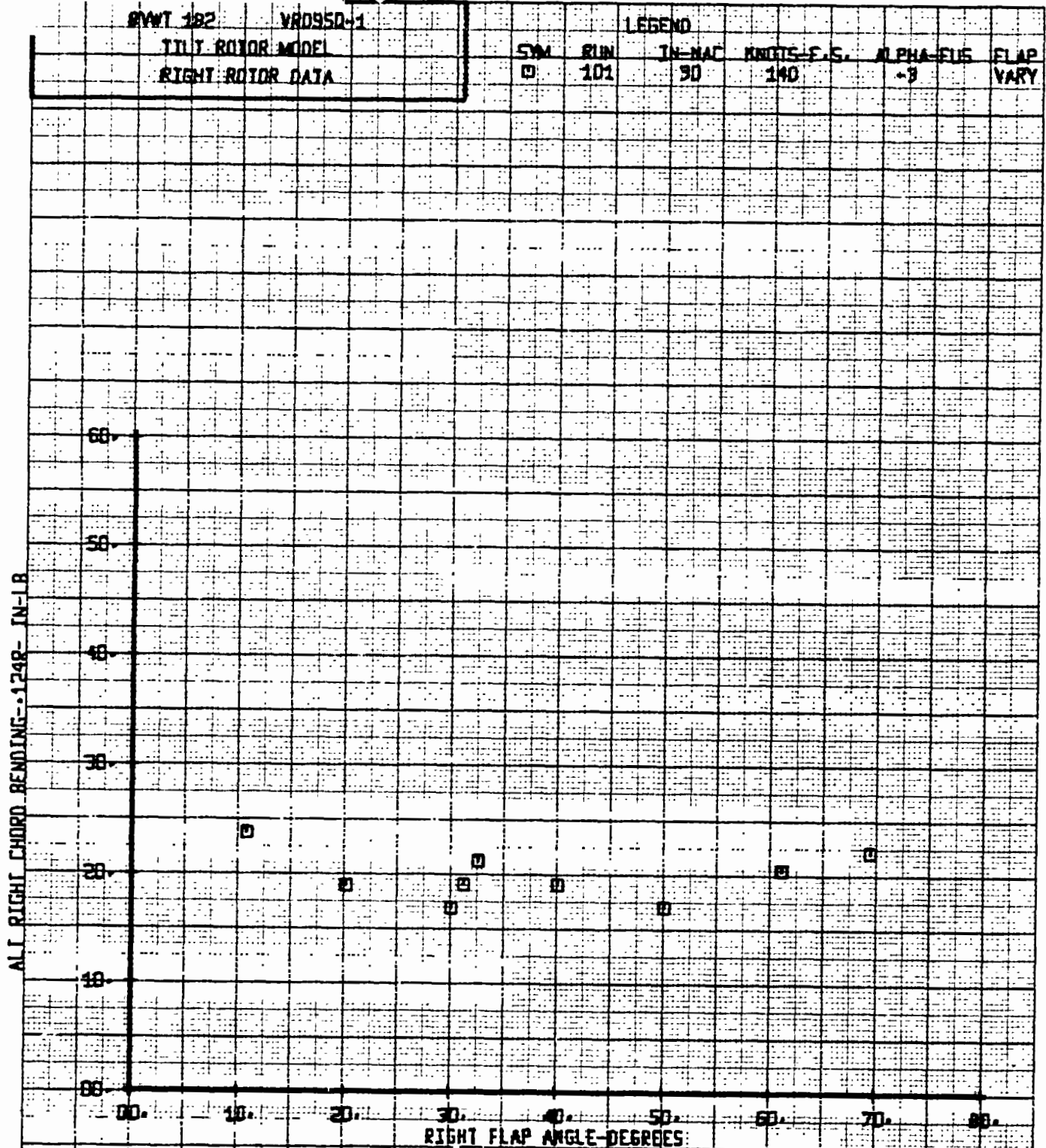
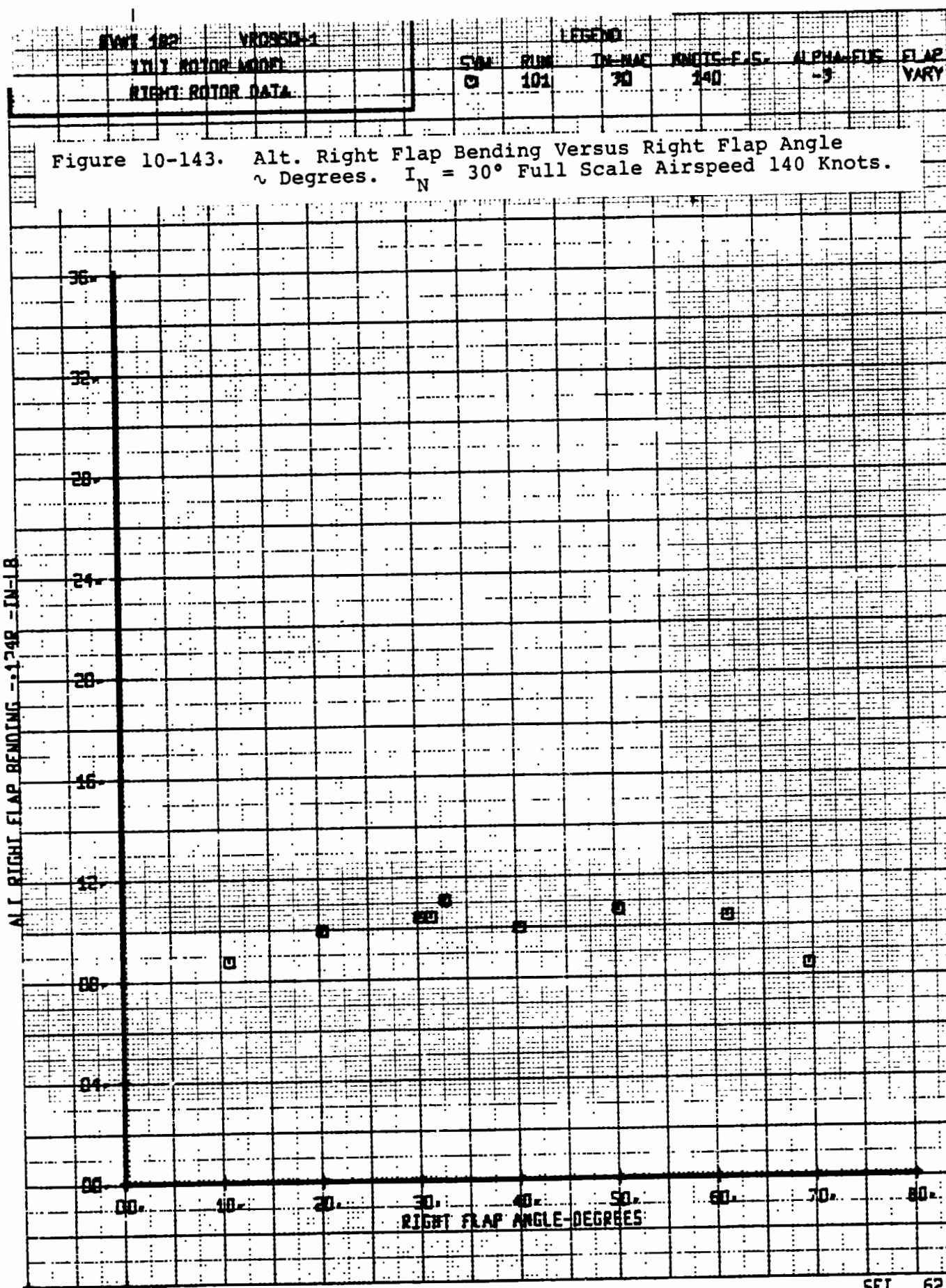


Figure 10-142. Alt. Right Chord Bending Versus Right Flap Angle
 ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.



BVWT 182 V80950-1

TILT ROTOR MODEL

RIGHT ROTOR DATA

LEGEND

SYM

RUN

IN-HAC

KNOTS-F.F.S.

ALPHA-FUS

FLAP

□

101

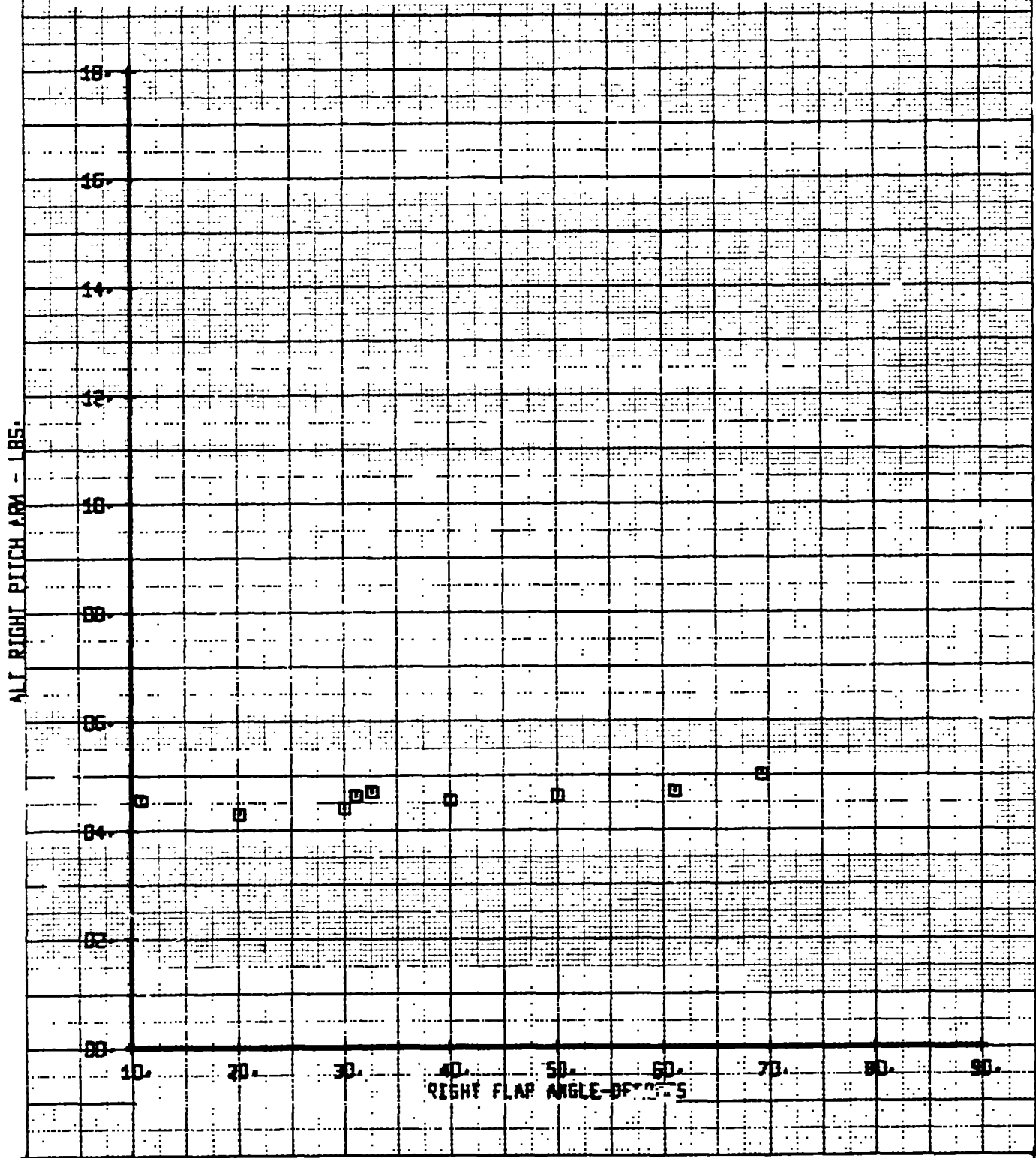
30

140

-3

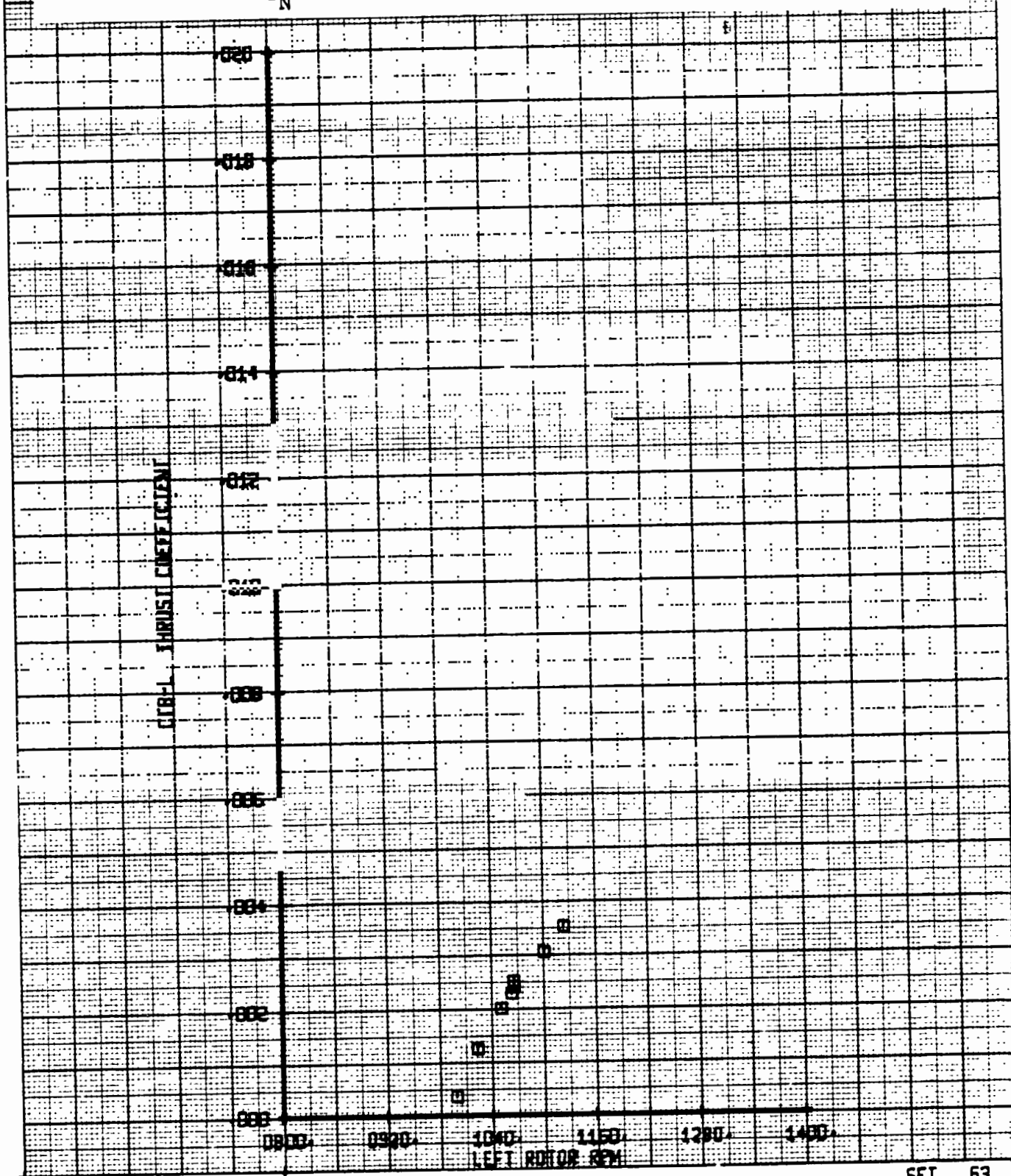
VARY

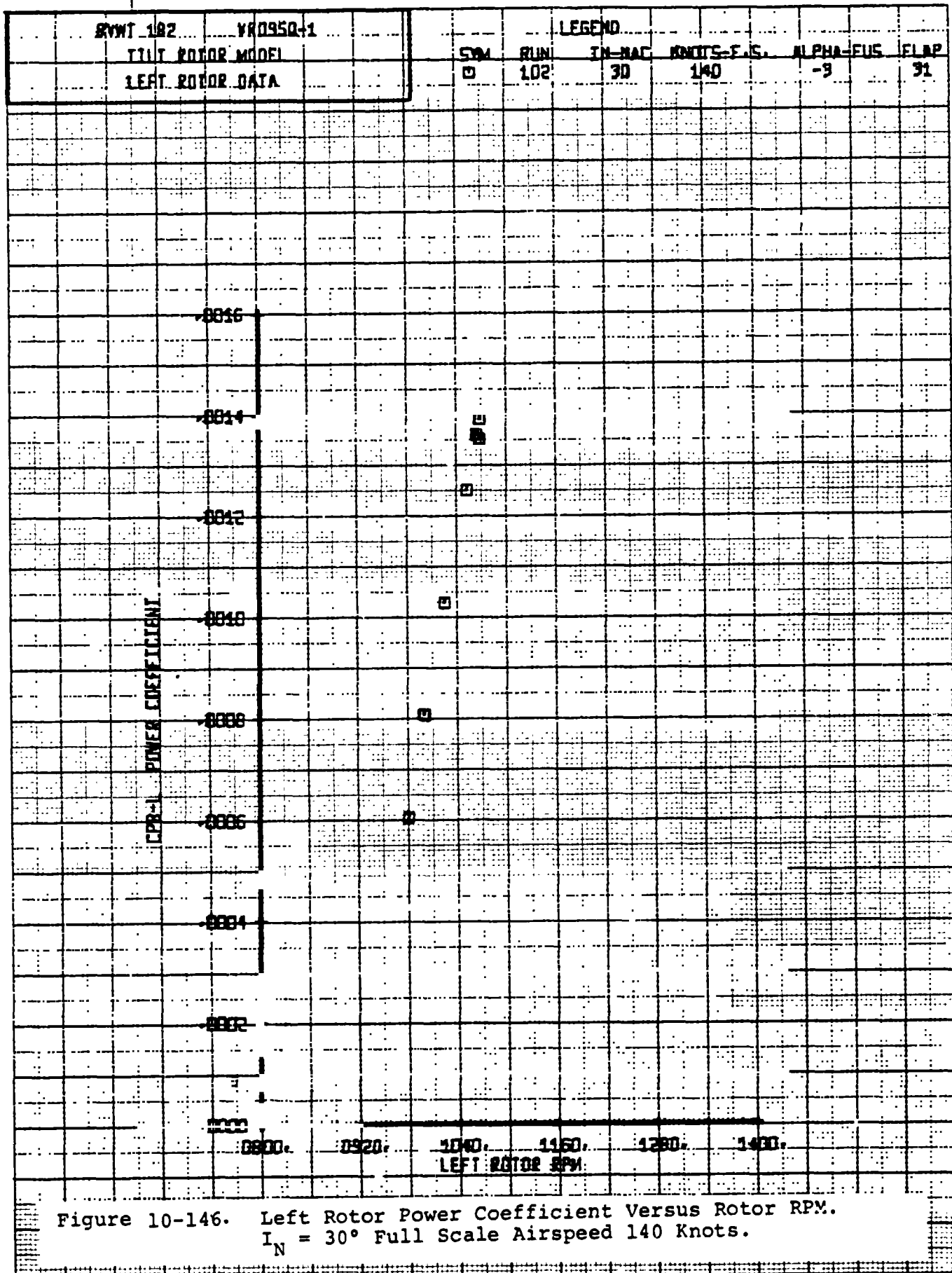
Figure 10-144. Alt. Right Pitch Link Load Versus Right Flap Angle
 ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.

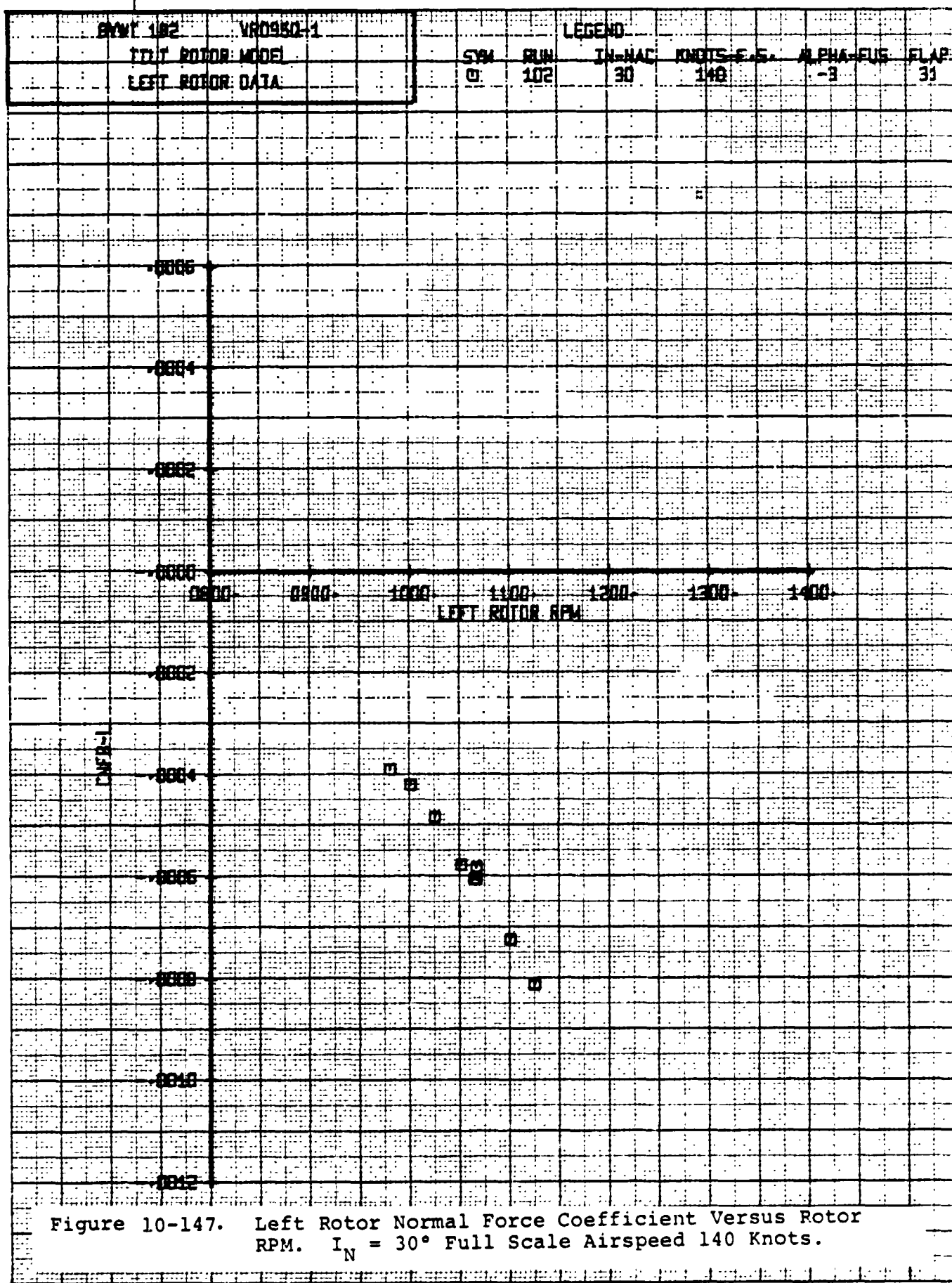


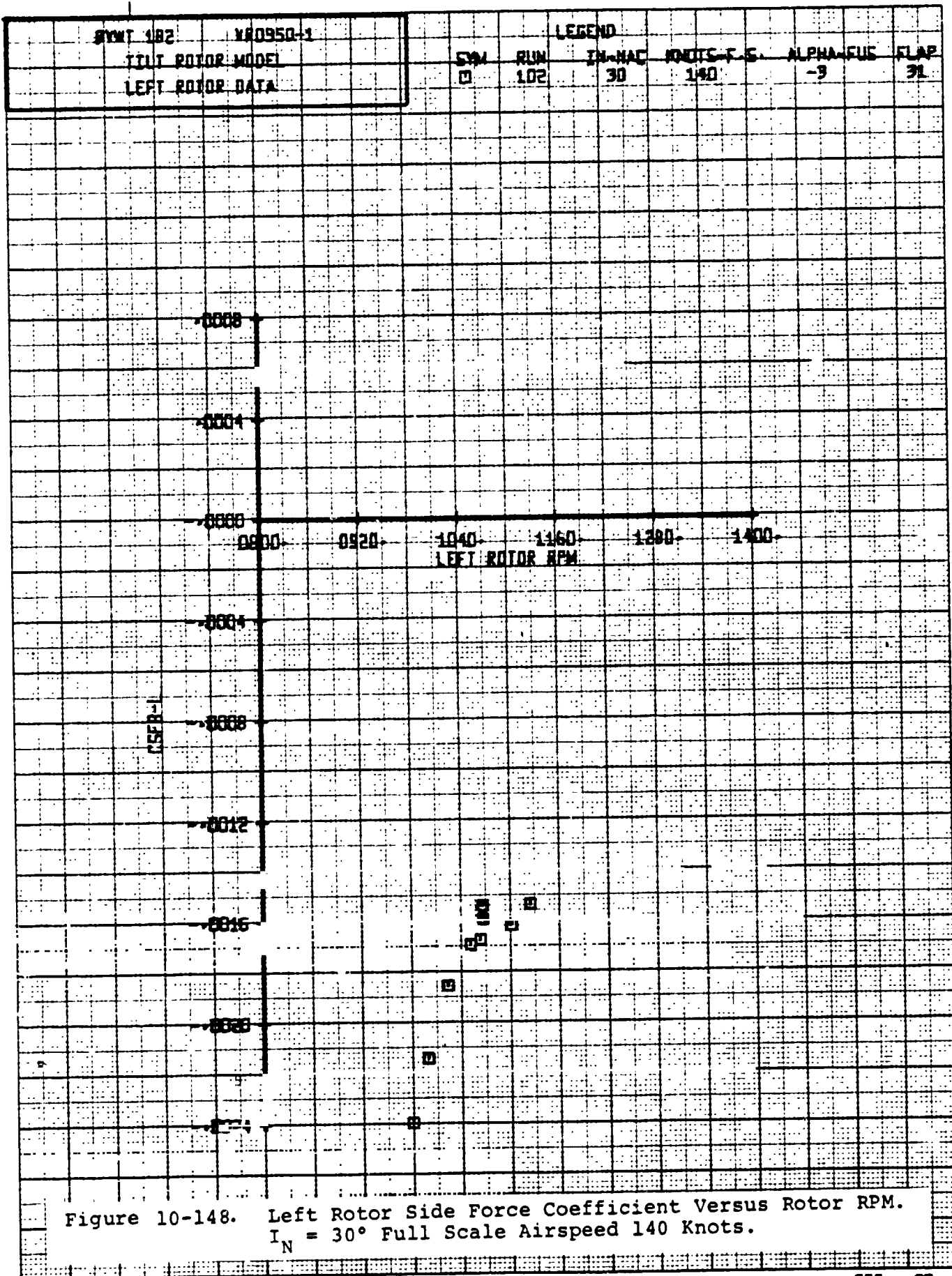
| | | | | | | | |
|------------------|----------|-----|-----|--------|-----------|-----------|------|
| BYWT 182 | VR0950-1 | SYM | RUN | IN-NAC | INETS-F-E | ALPHA-FUS | FLAP |
| LEFT ROTOR MODEL | | 10 | 102 | 30 | 140 | -3 | 31 |
| LEFT ROTOR DATA | | | | | | | |

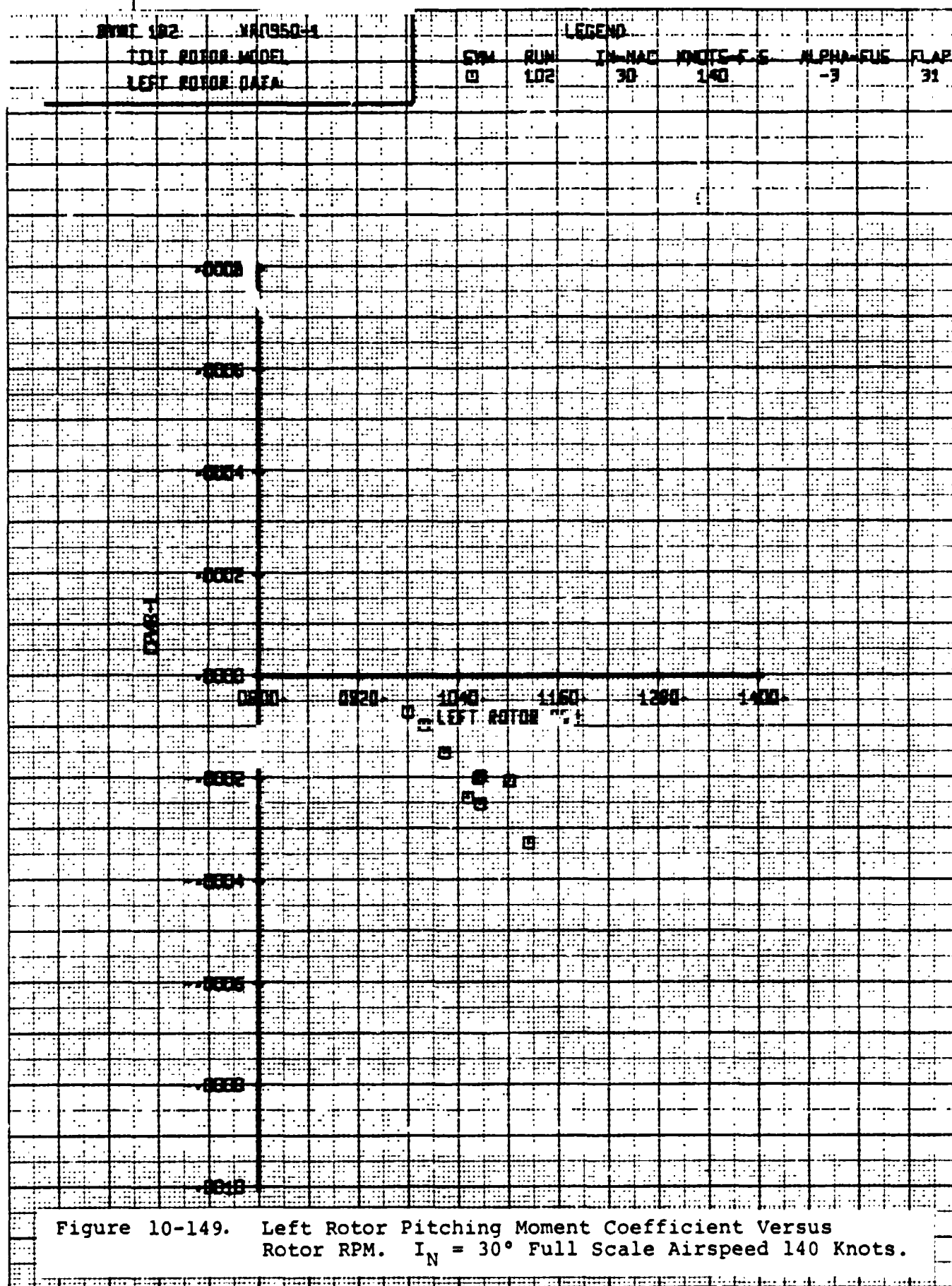
Figure 10-145. Left Rotor Thrust Coefficient Versus Rotor RPM.
 $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.

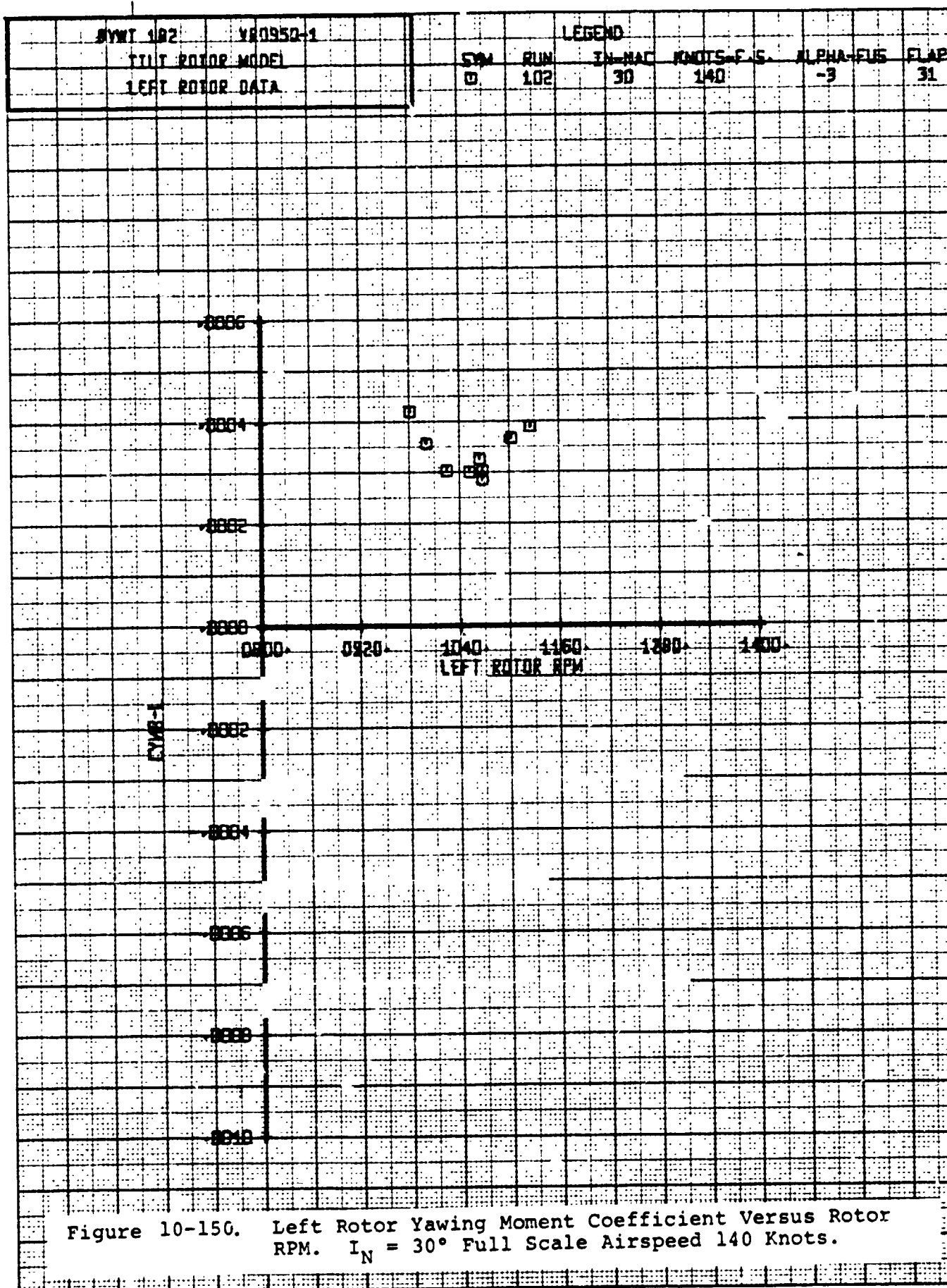






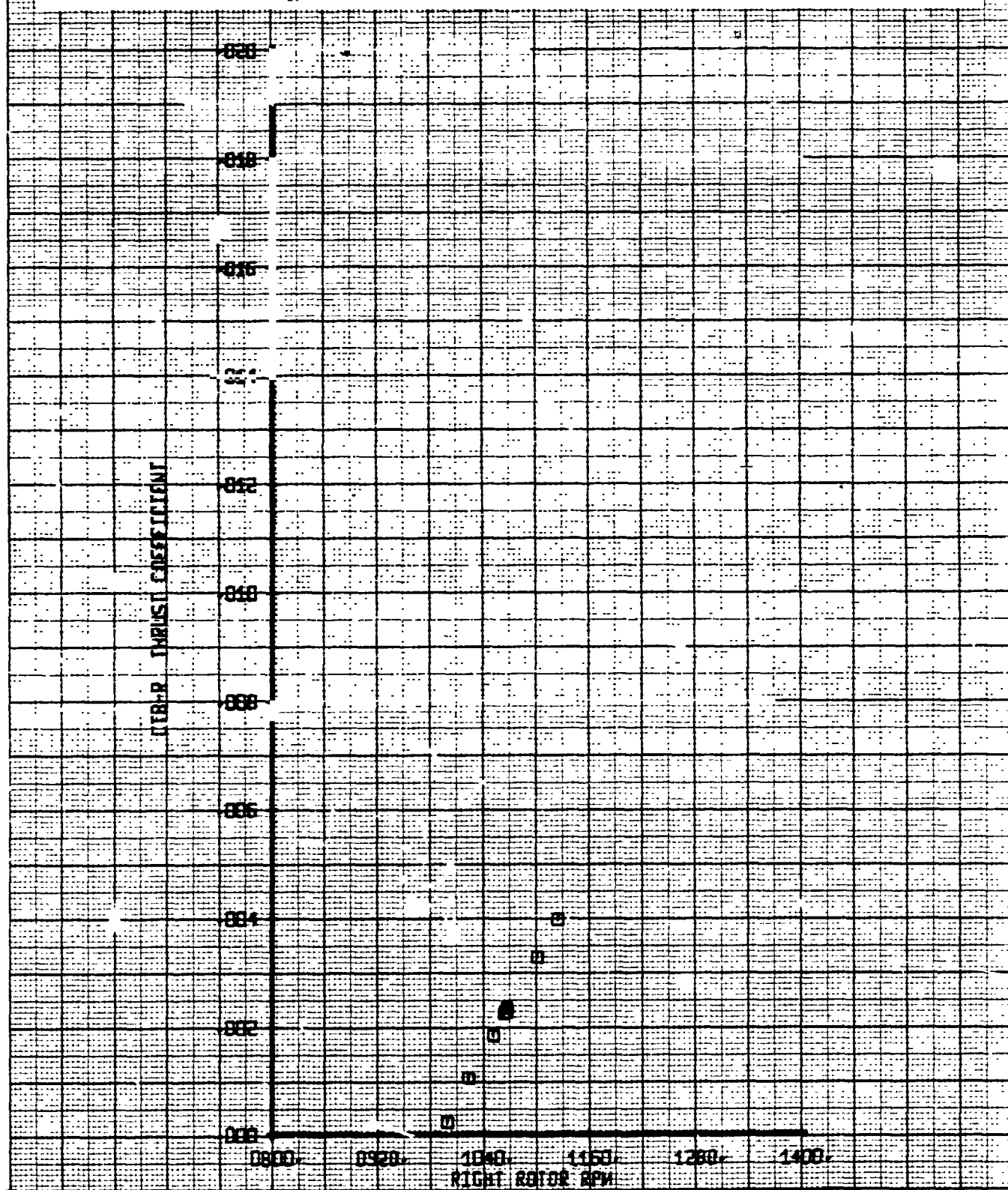






| | | | | | | | |
|--------------------|----------|--------|-----|--------|------------|-----------|------|
| BVWT 182 | YND950-4 | LEGEND | | | | | |
| THrust Rotor Model | | SYM | PLN | IN-NAE | KNOTS F.S. | ALPHA-DEG | CLAP |
| RIGHT ROTOR DATA | | □ | 102 | 30 | 140 | -3 | 31 |

Figure 10-151. Right Rotor Thrust Coefficient Versus Rotor RPM.
 $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.



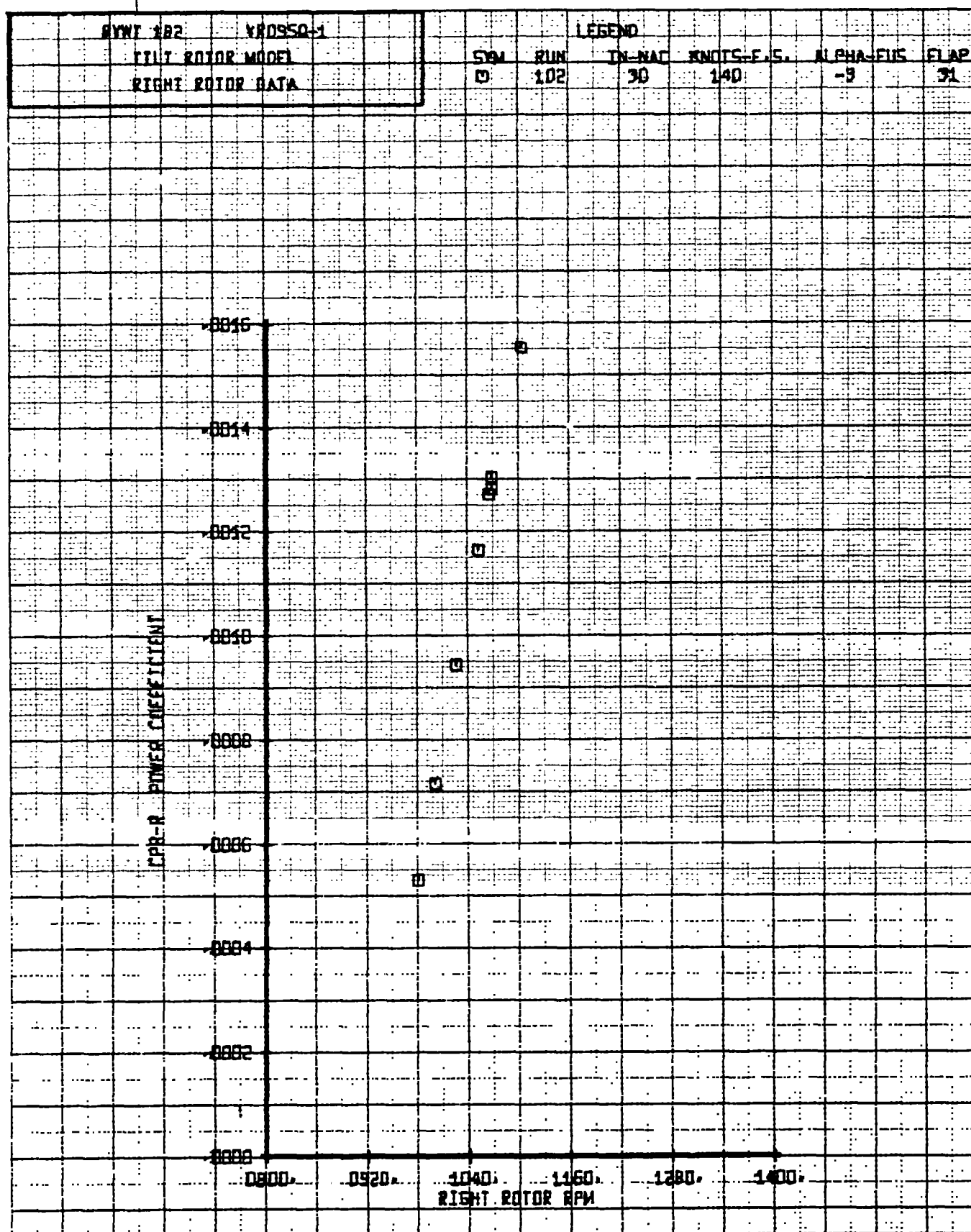
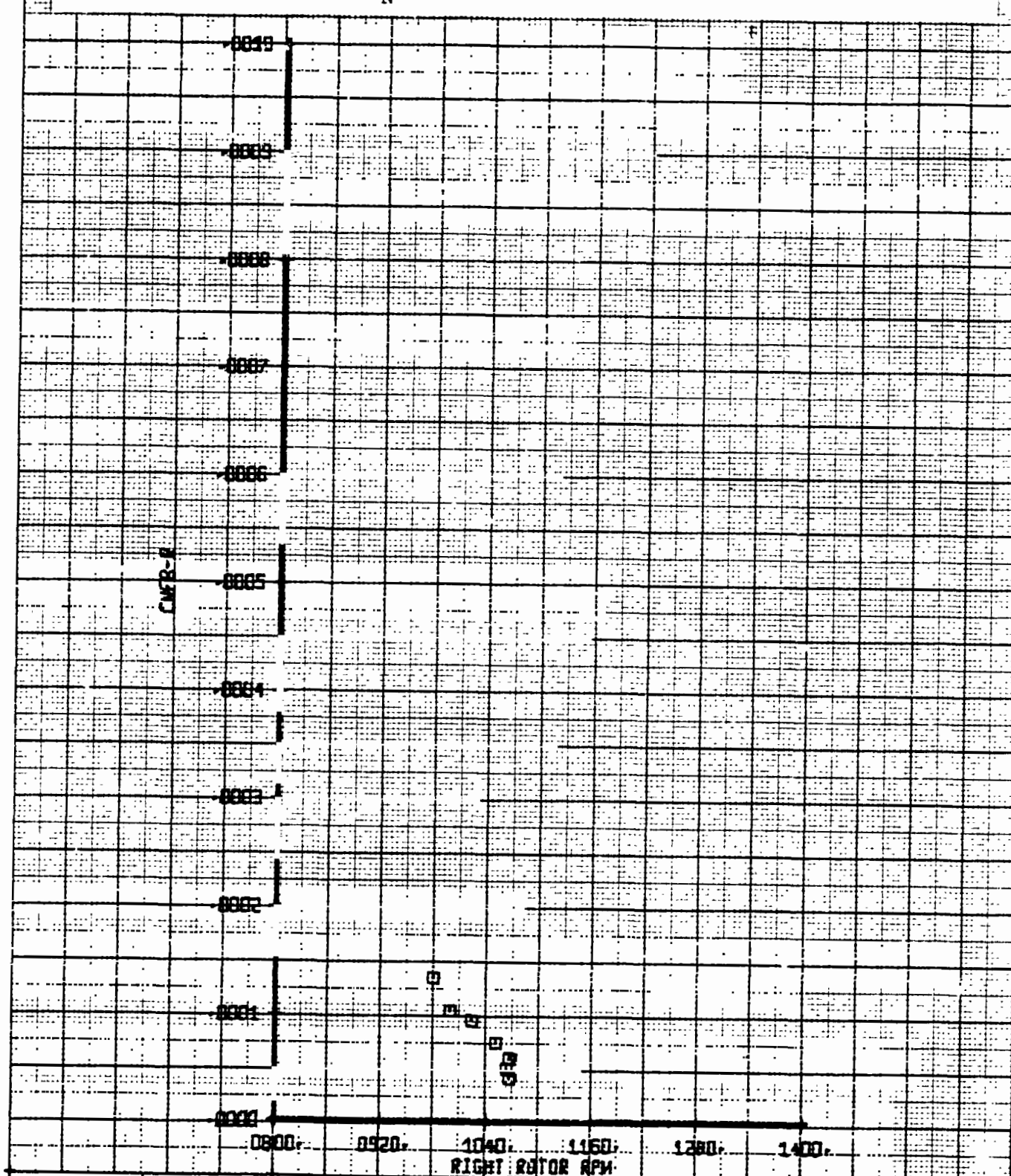
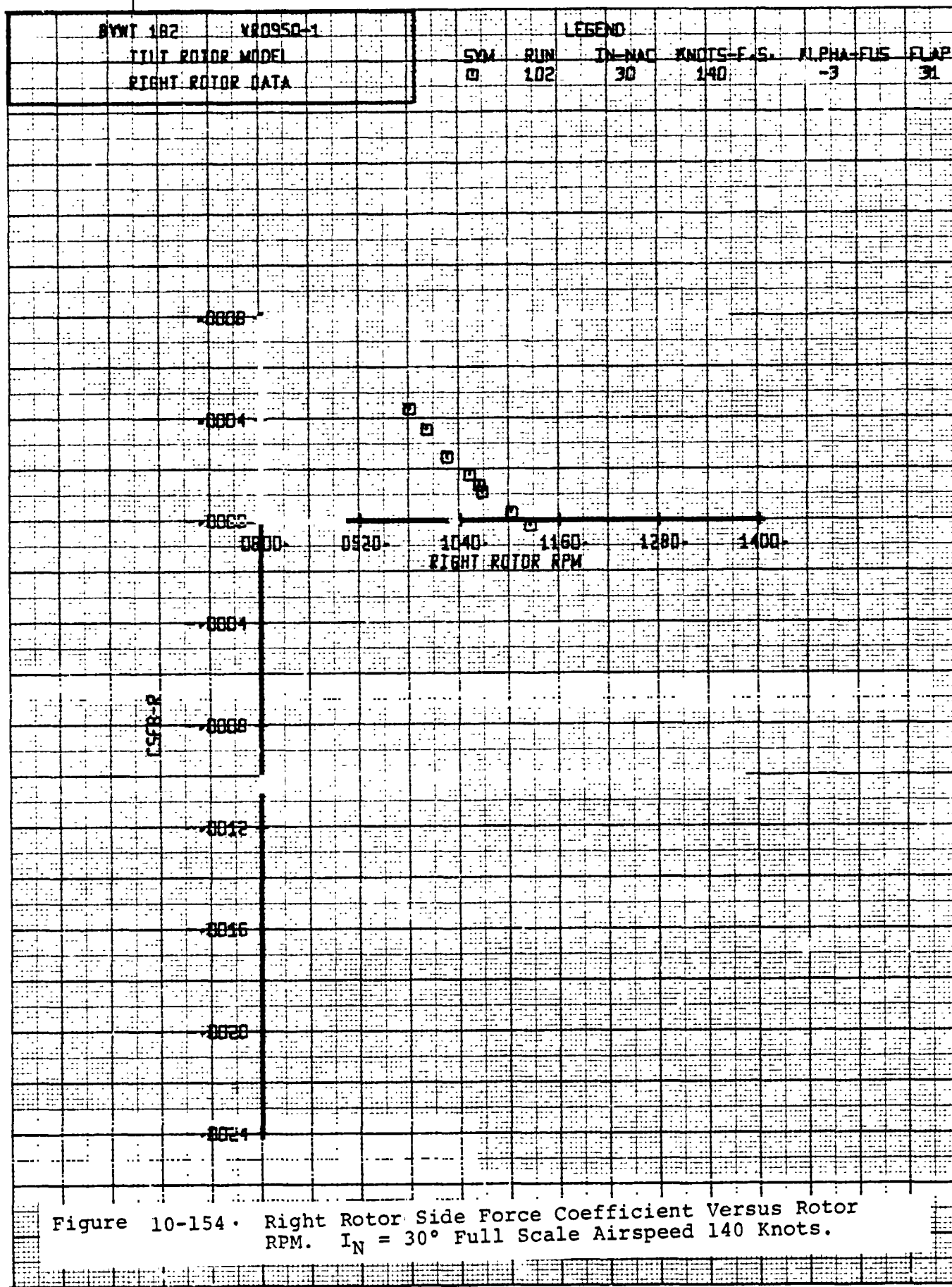


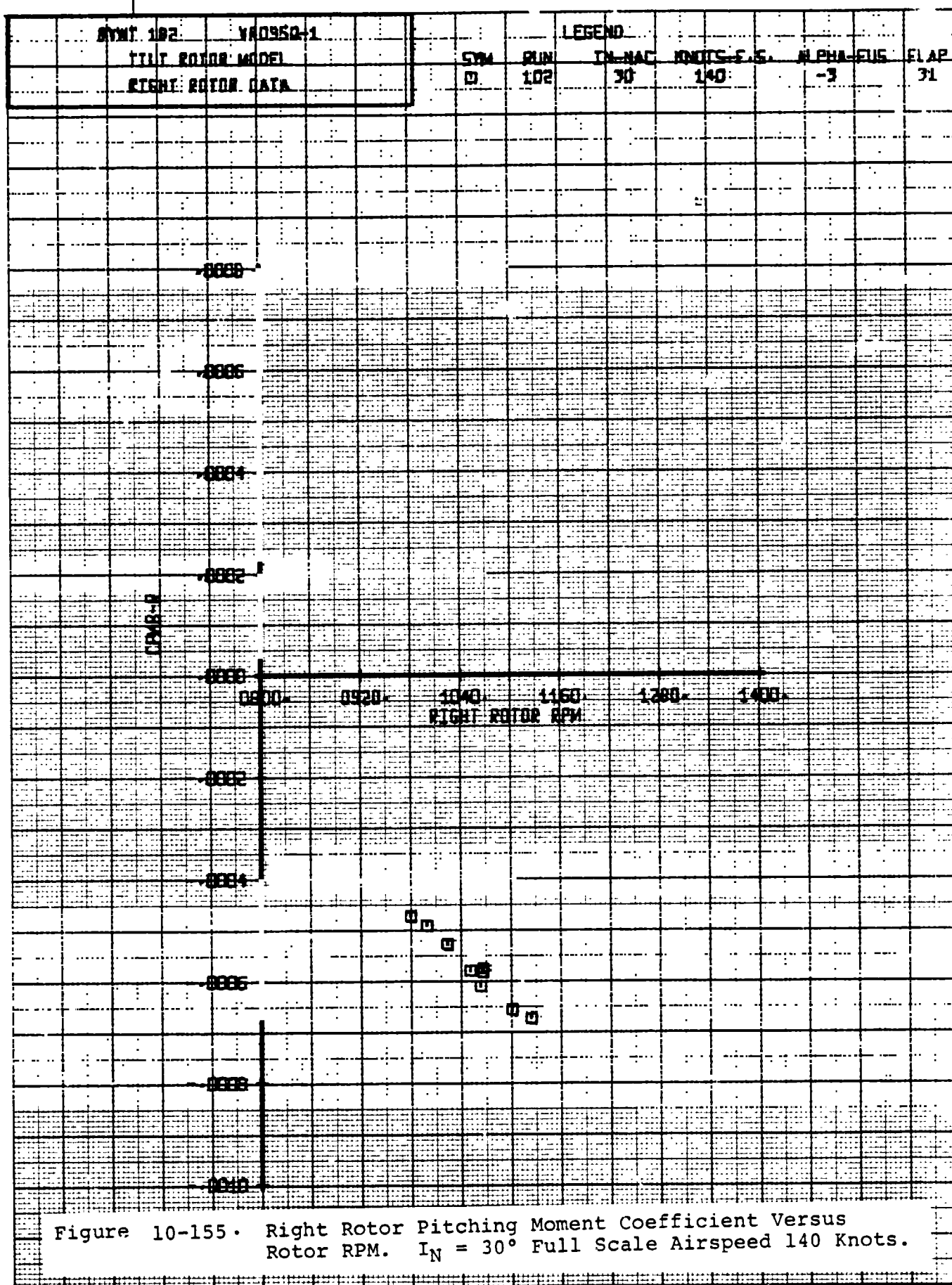
Figure 10-152. Right Rotor Power Coefficient Versus Rotor RPM.
 $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.

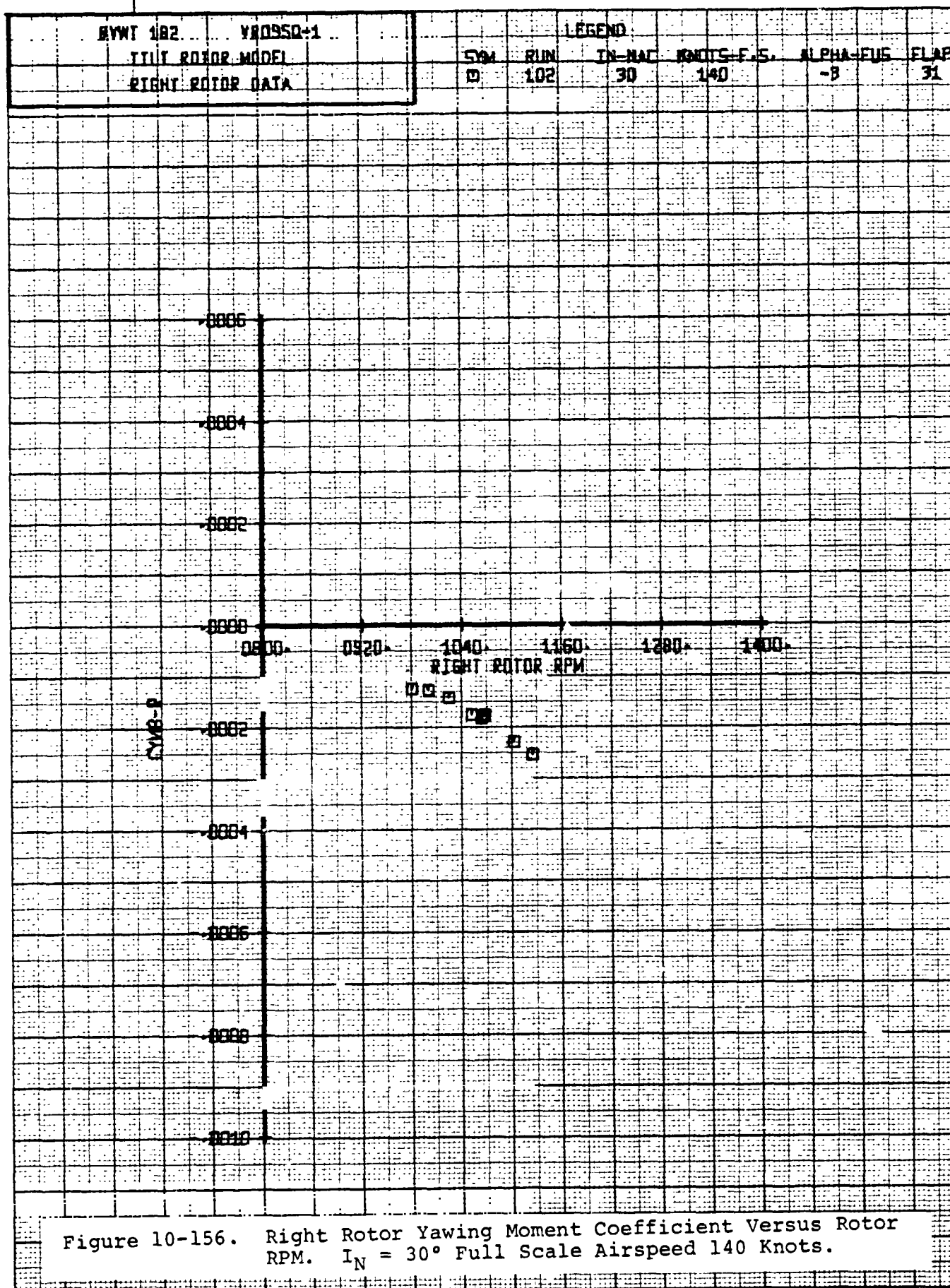
| | | | | | |
|-------------------|----------|--------|-----|--------|------------|
| RVMT 182 | YR0950-1 | LEGEND | | | |
| TITLE ROTOR MODEL | | SYM | RUN | IN MAC | KNOTS-F.S. |
| RIGHT ROTOR DATA | | □ | 102 | 30 | 140 |
| | | | | | ALPHA-FUS |
| | | | | | -3 |
| | | | | | FLAP |
| | | | | | 31 |

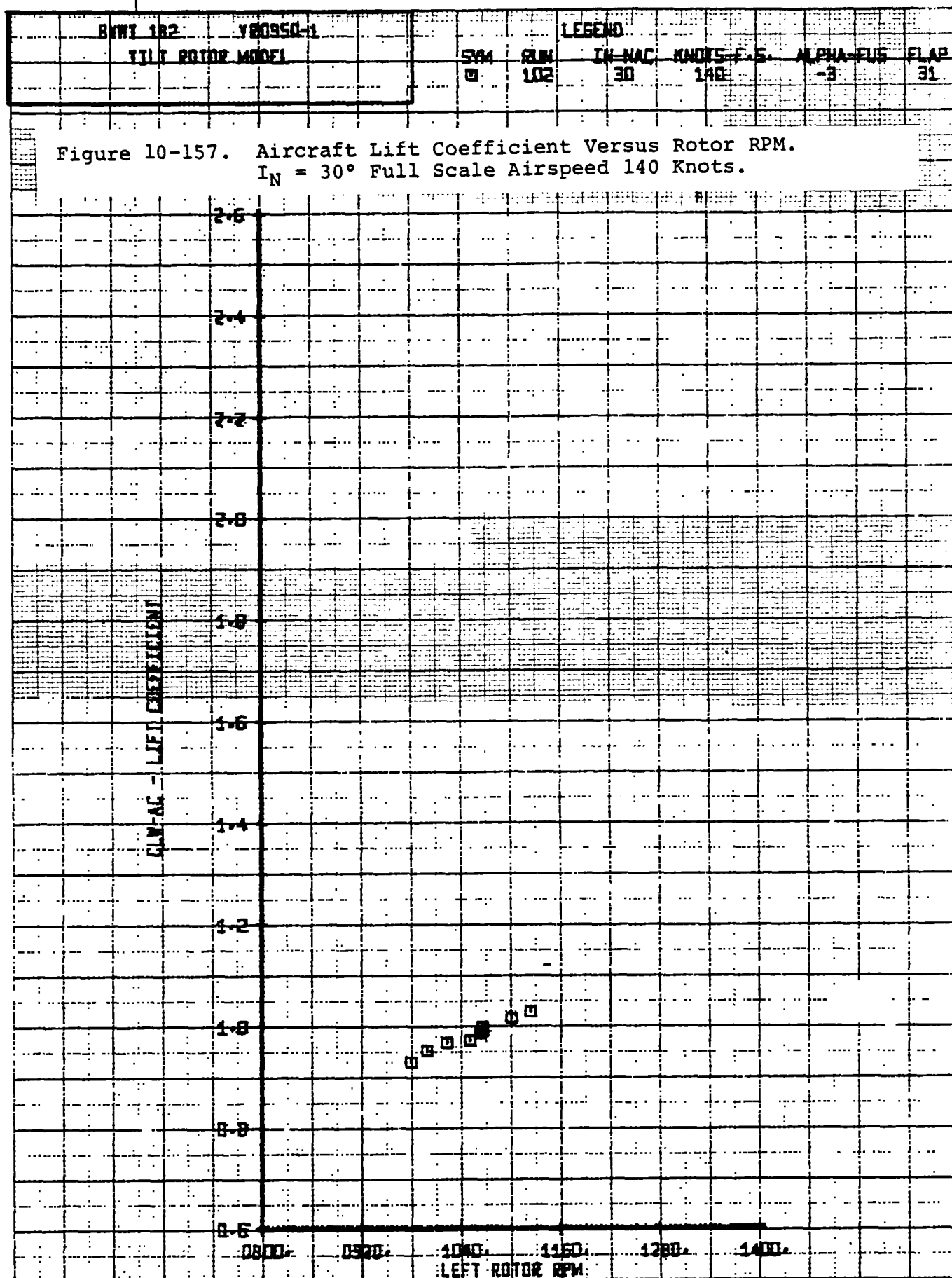
Figure 10-153. Right Rotor Normal Force Coefficient Versus Rotor RPM. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.

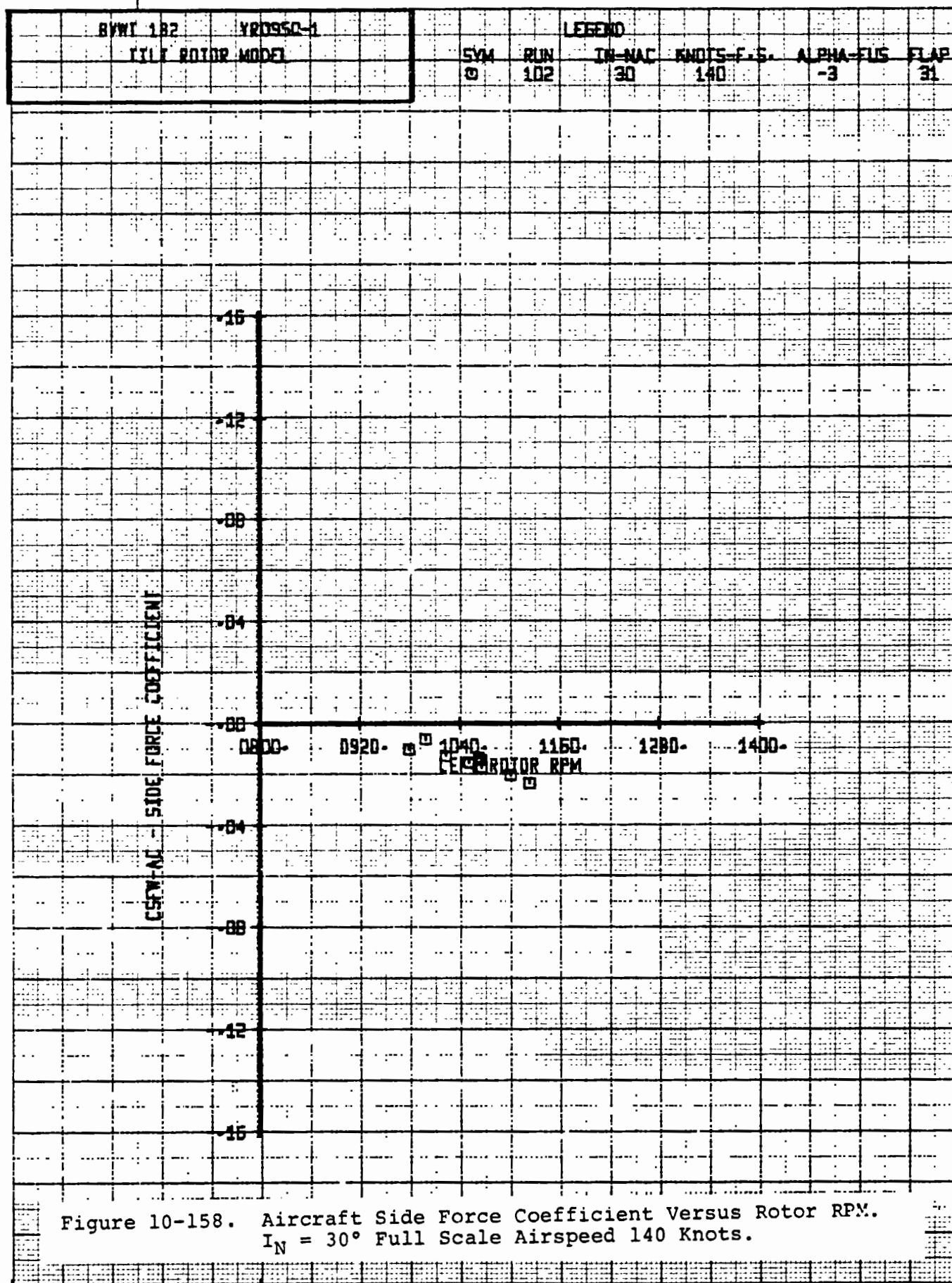


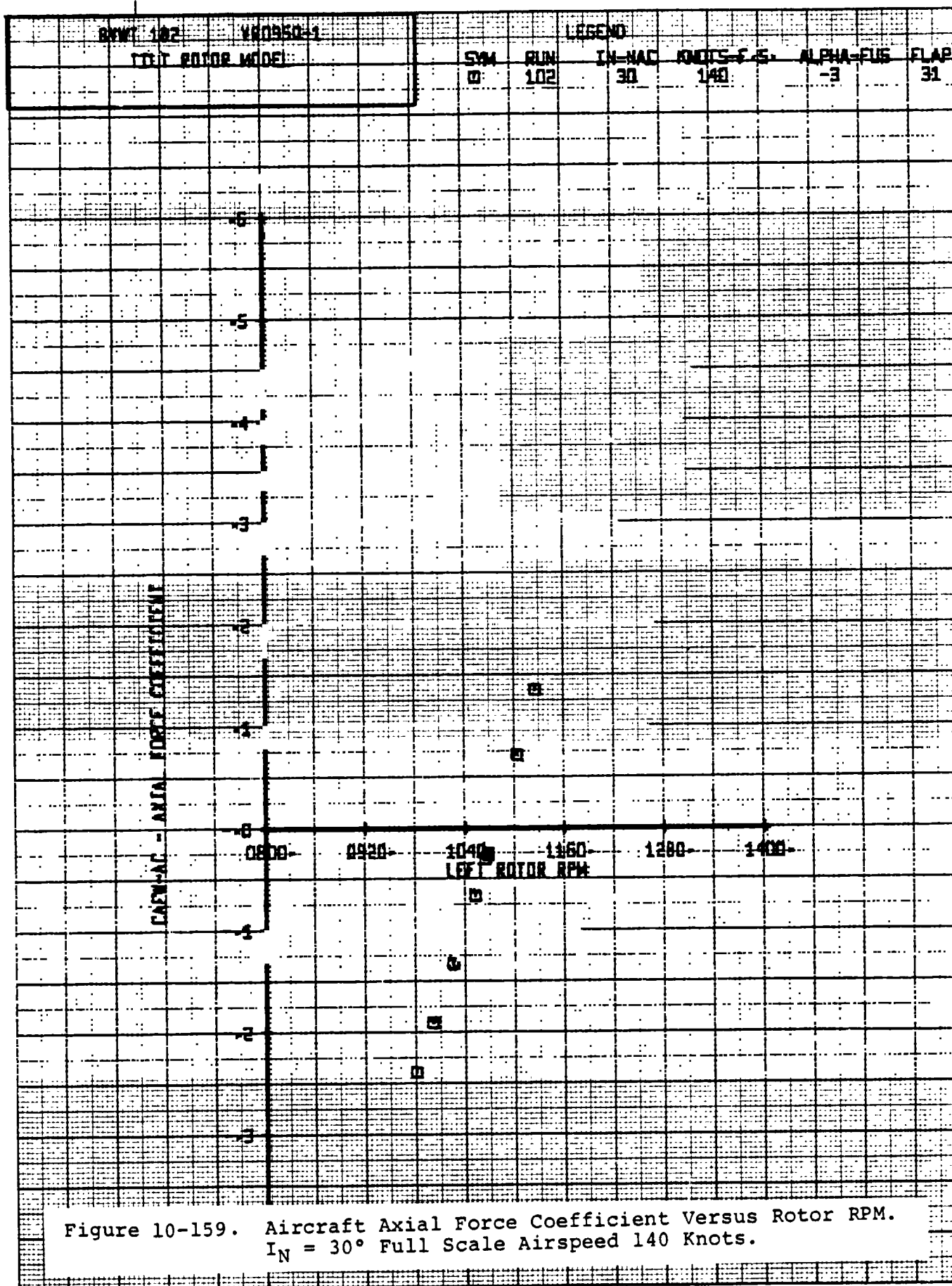


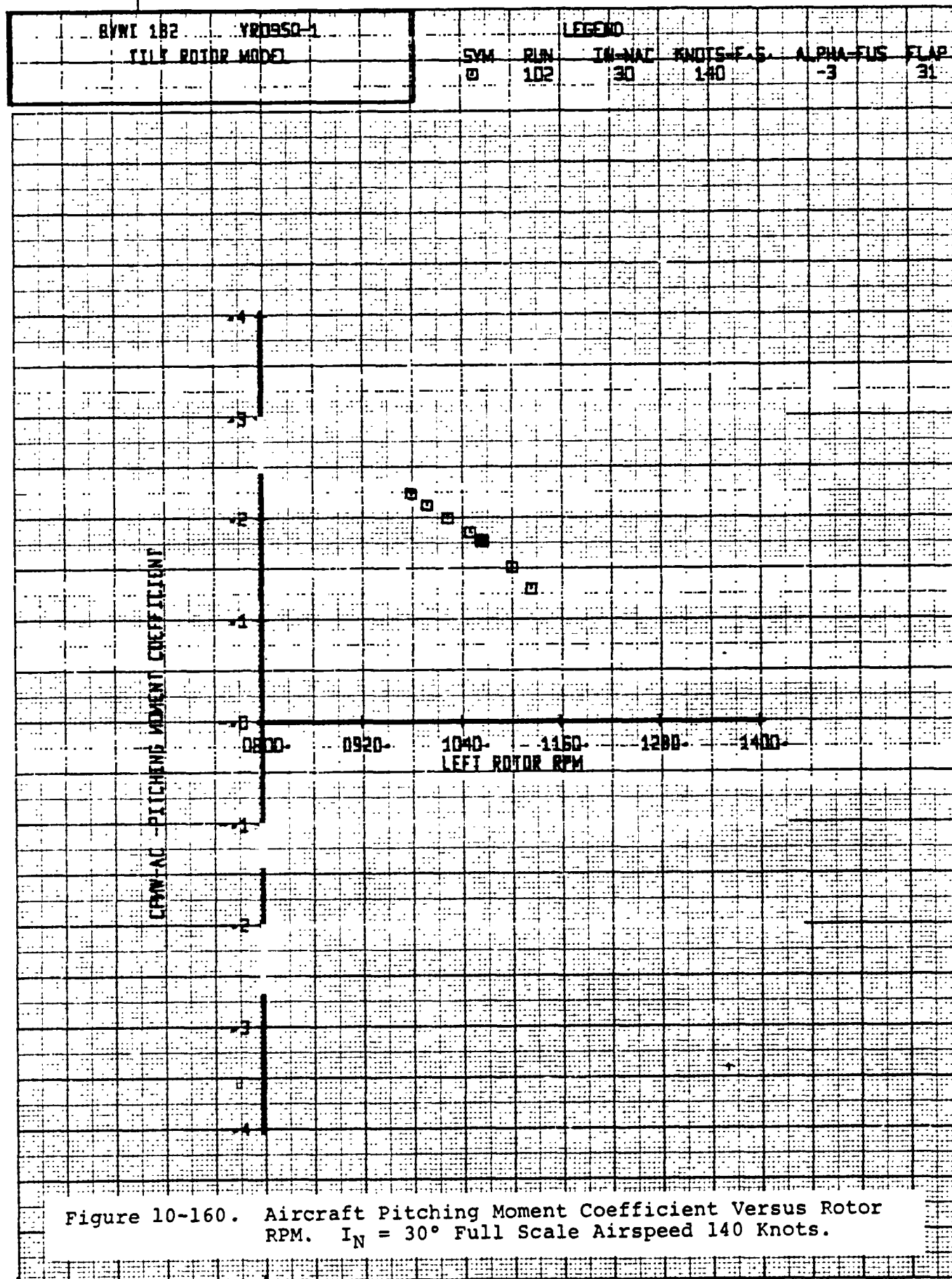


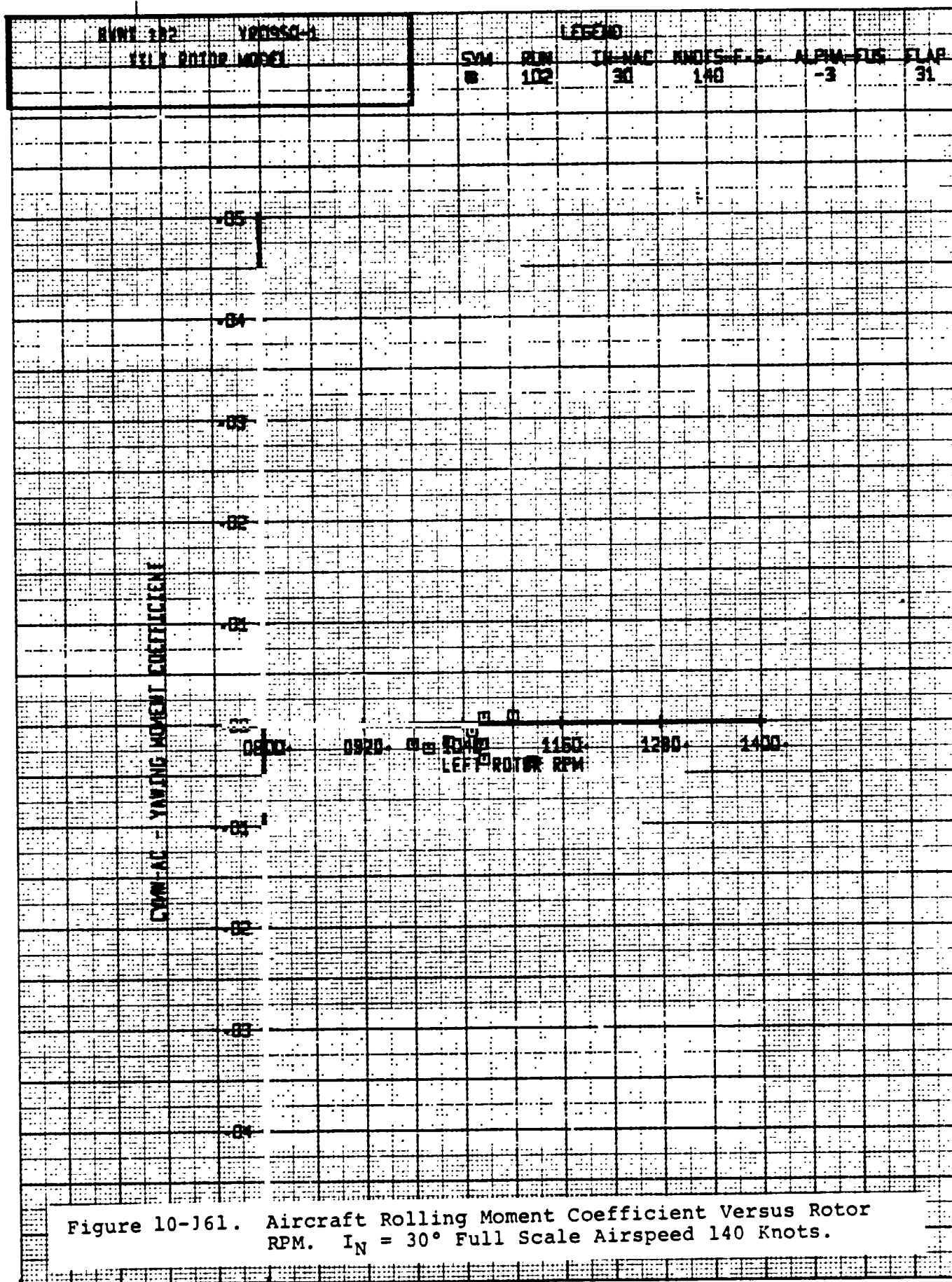












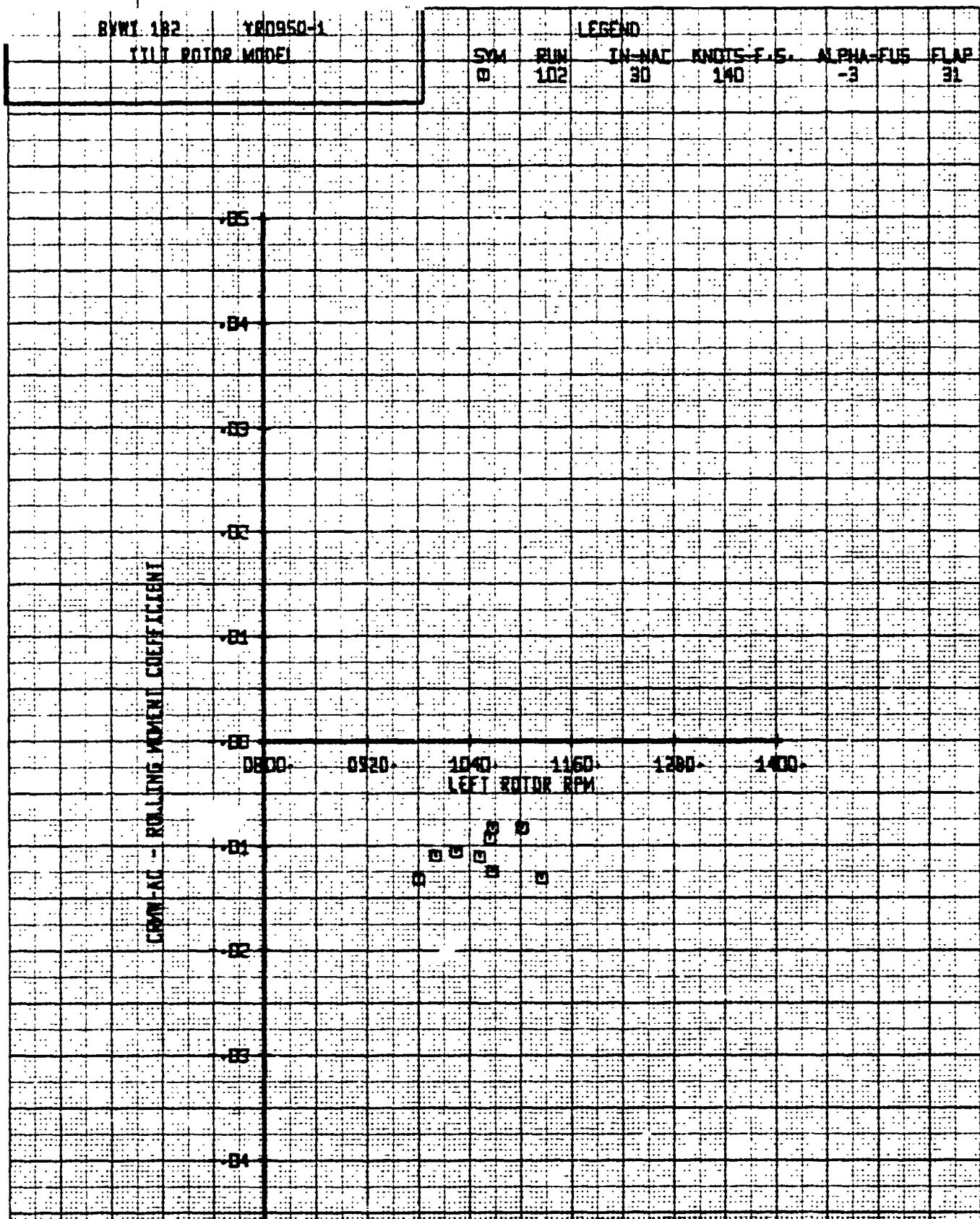


Figure 10-162. Aircraft Yawing Moment Coefficient Versus Rotor RPM. $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.

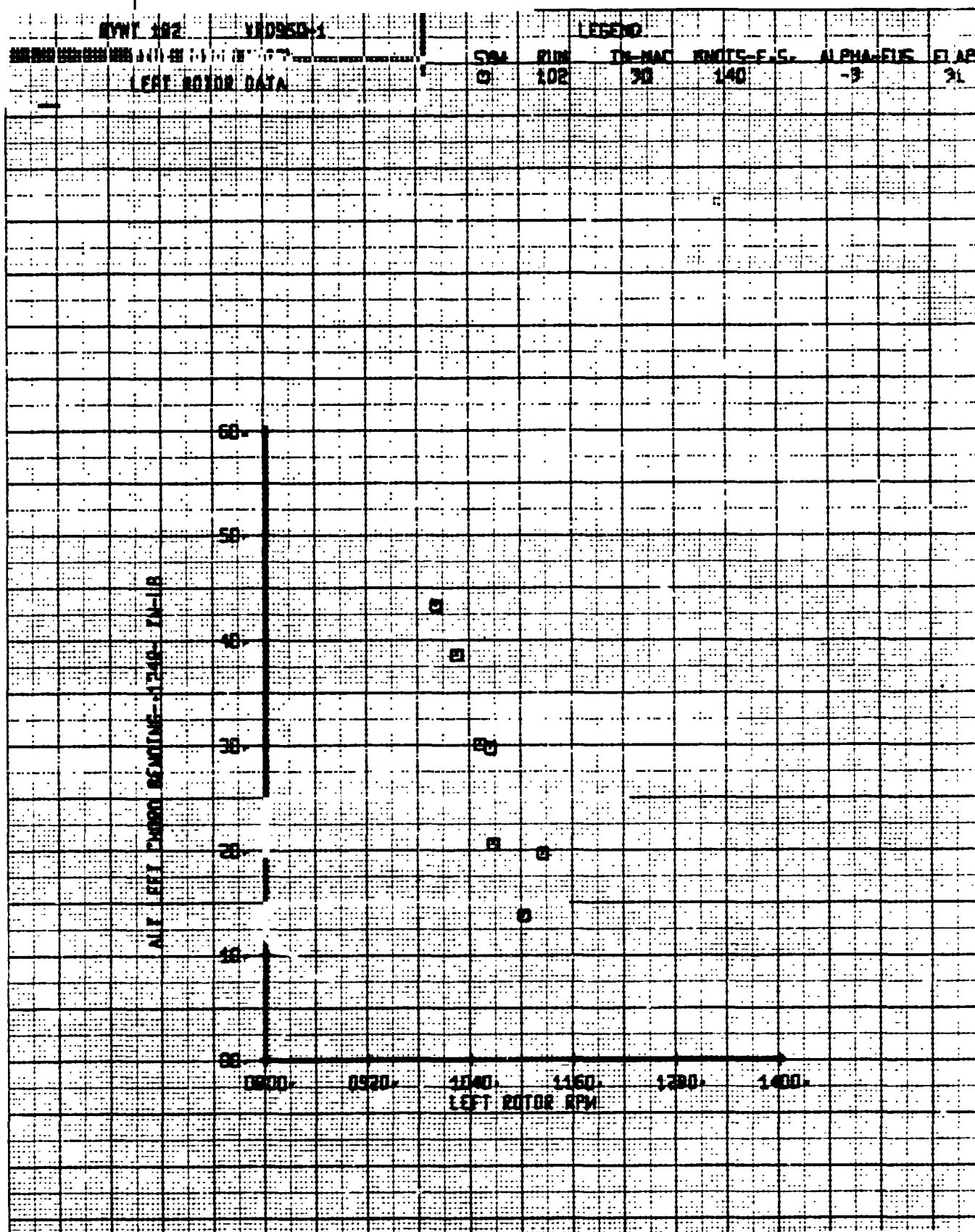
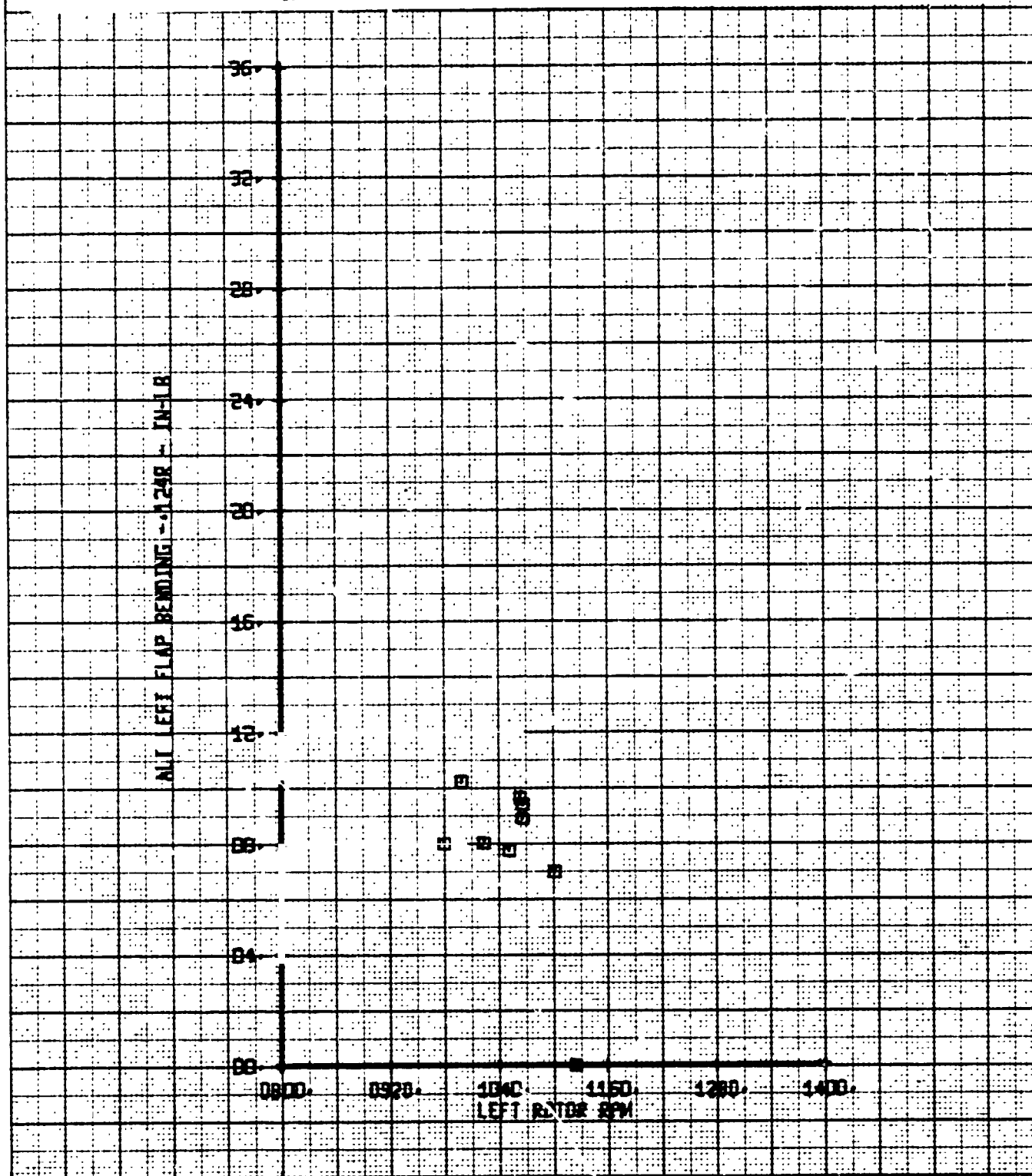
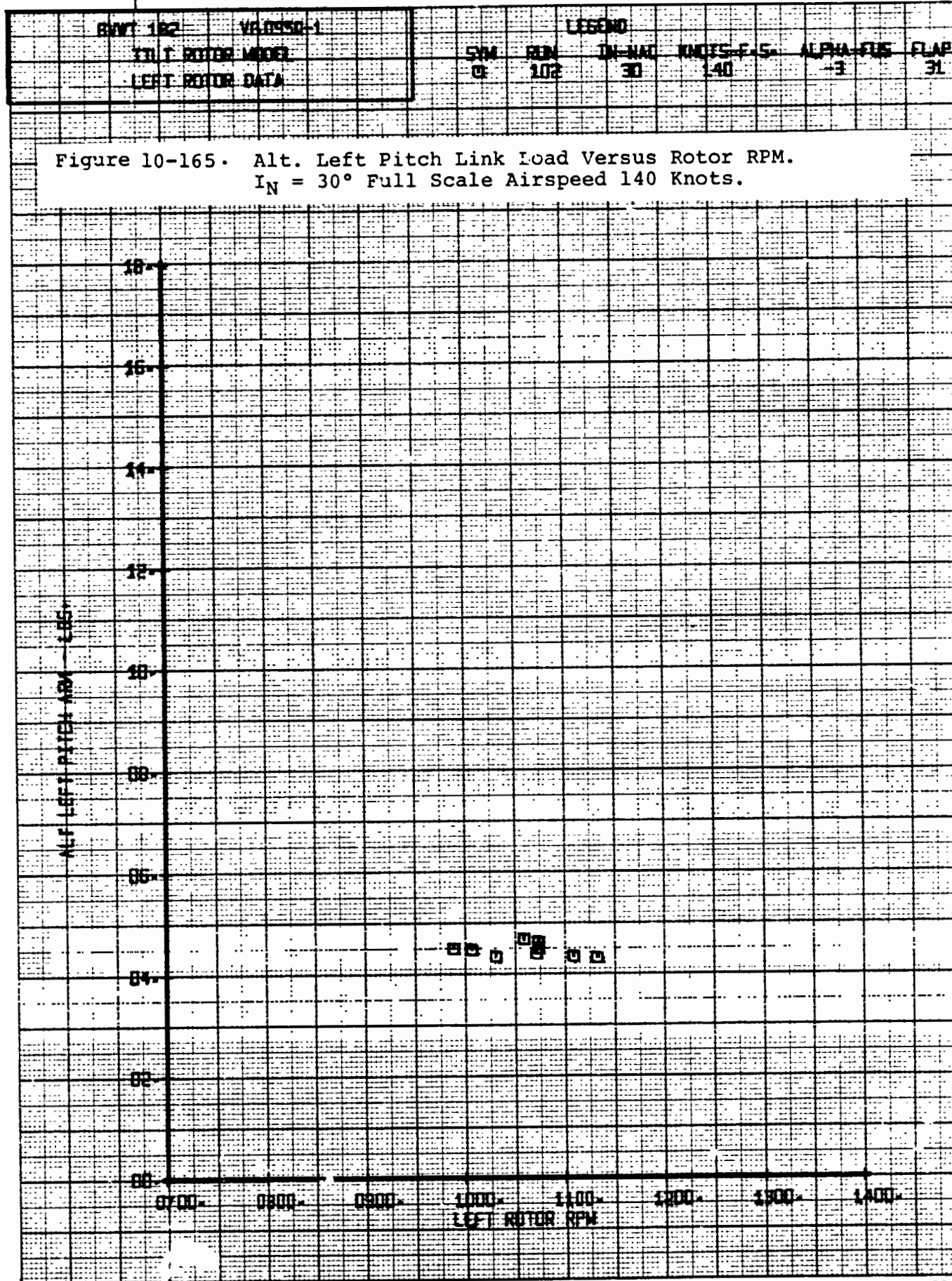


Figure 10-163. Alt. Left Chord Bending Versus Rotor RPM.
 $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.

| | | | | | |
|-----------------|----------|--------|-----|--------|------------|
| BVWT 182 | VF0950-1 | LEGEND | | | |
| LEFT ROTOR MODE | | SYM | RUN | IN-MAC | KNOTS-F.S. |
| LEFT ROTOR DATA | | □ | 102 | 30 | 140 |
| | | | | | ALPHA-FUS |
| | | | | | -9 |
| | | | | | FLAP |
| | | | | | 31 |

Figure 10-164. Alt. Left Flap Bending Versus Rotor RPM.
 $I_N = 30^\circ$ Full Scale Airspeed 140 Knts.





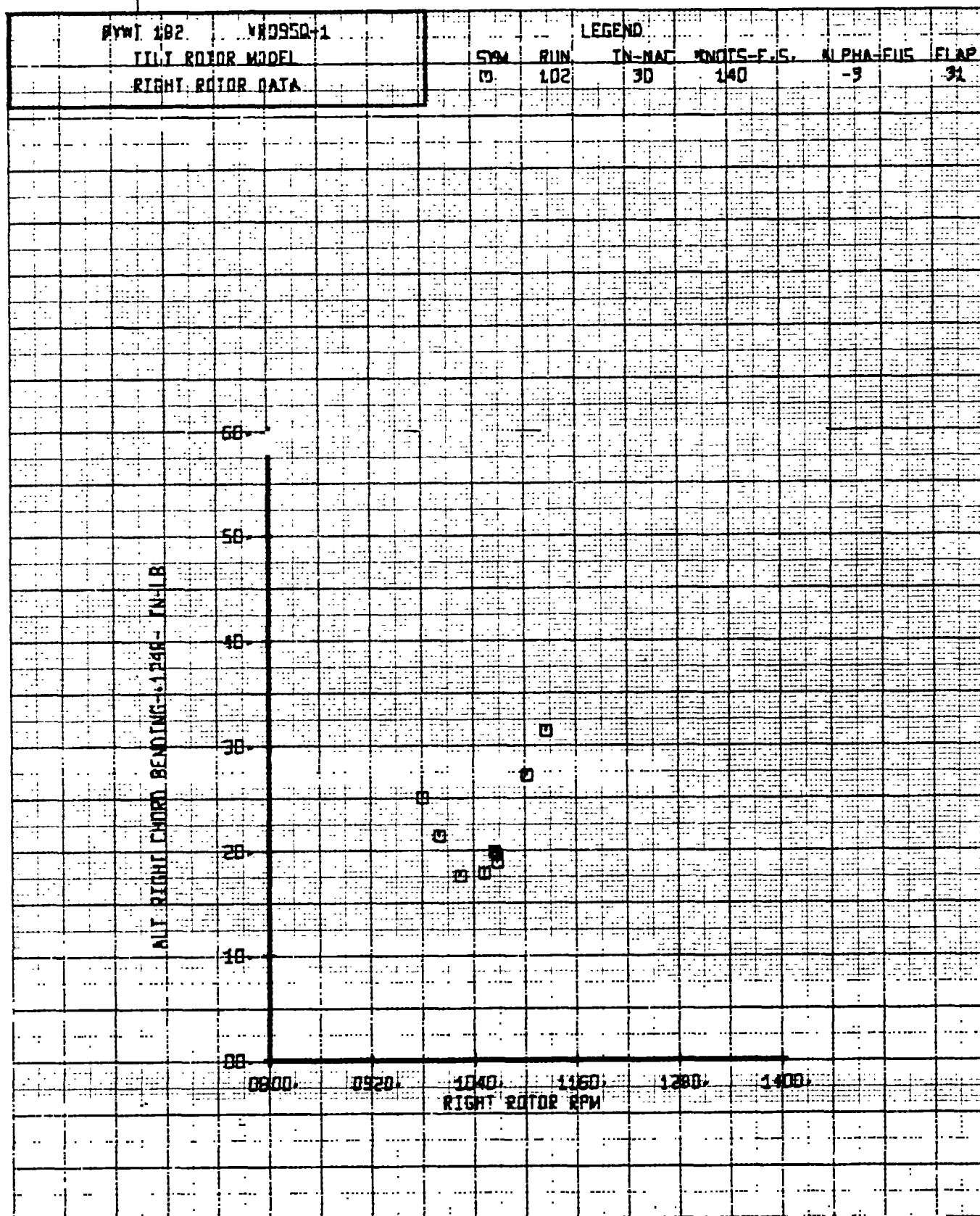
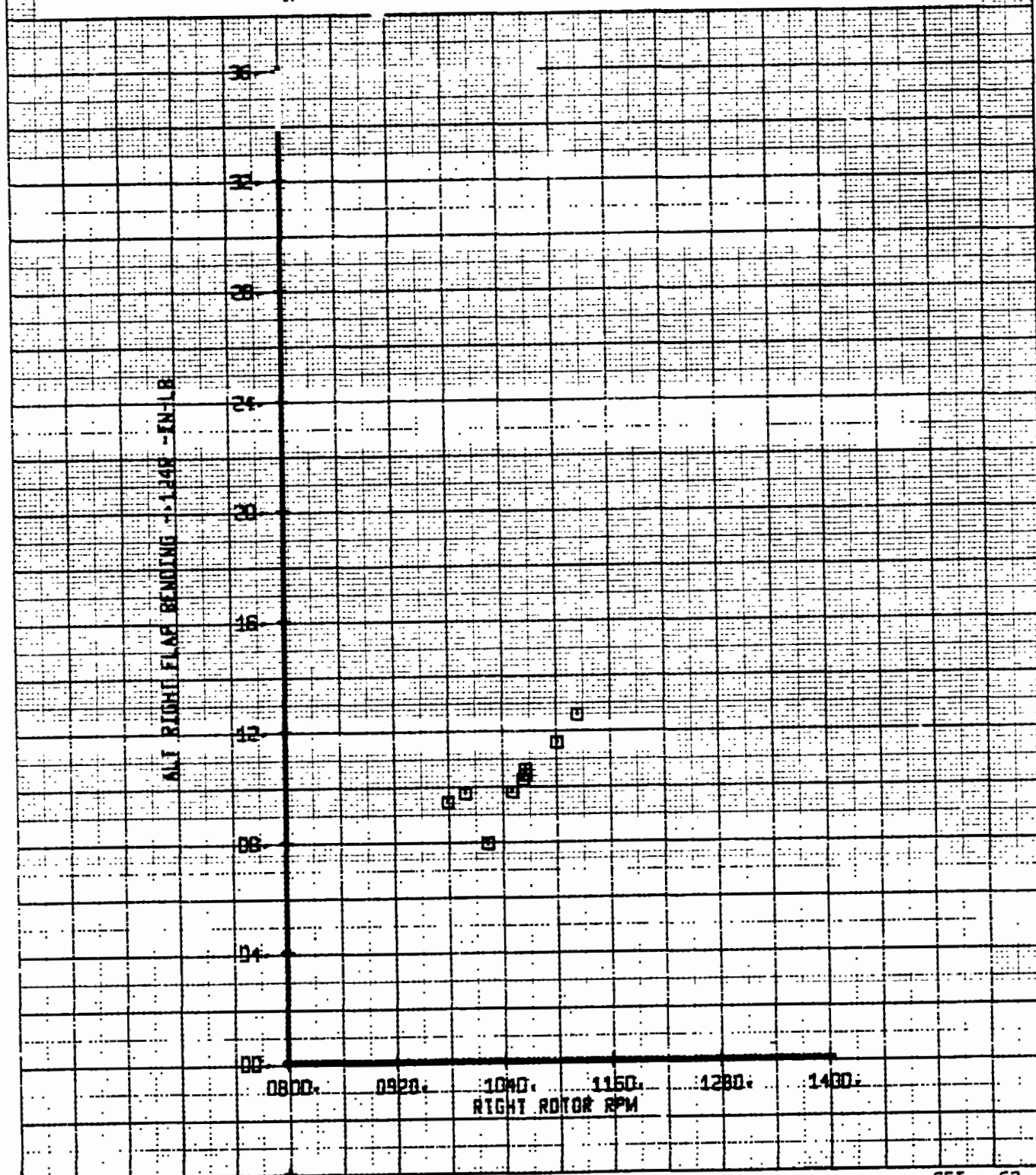
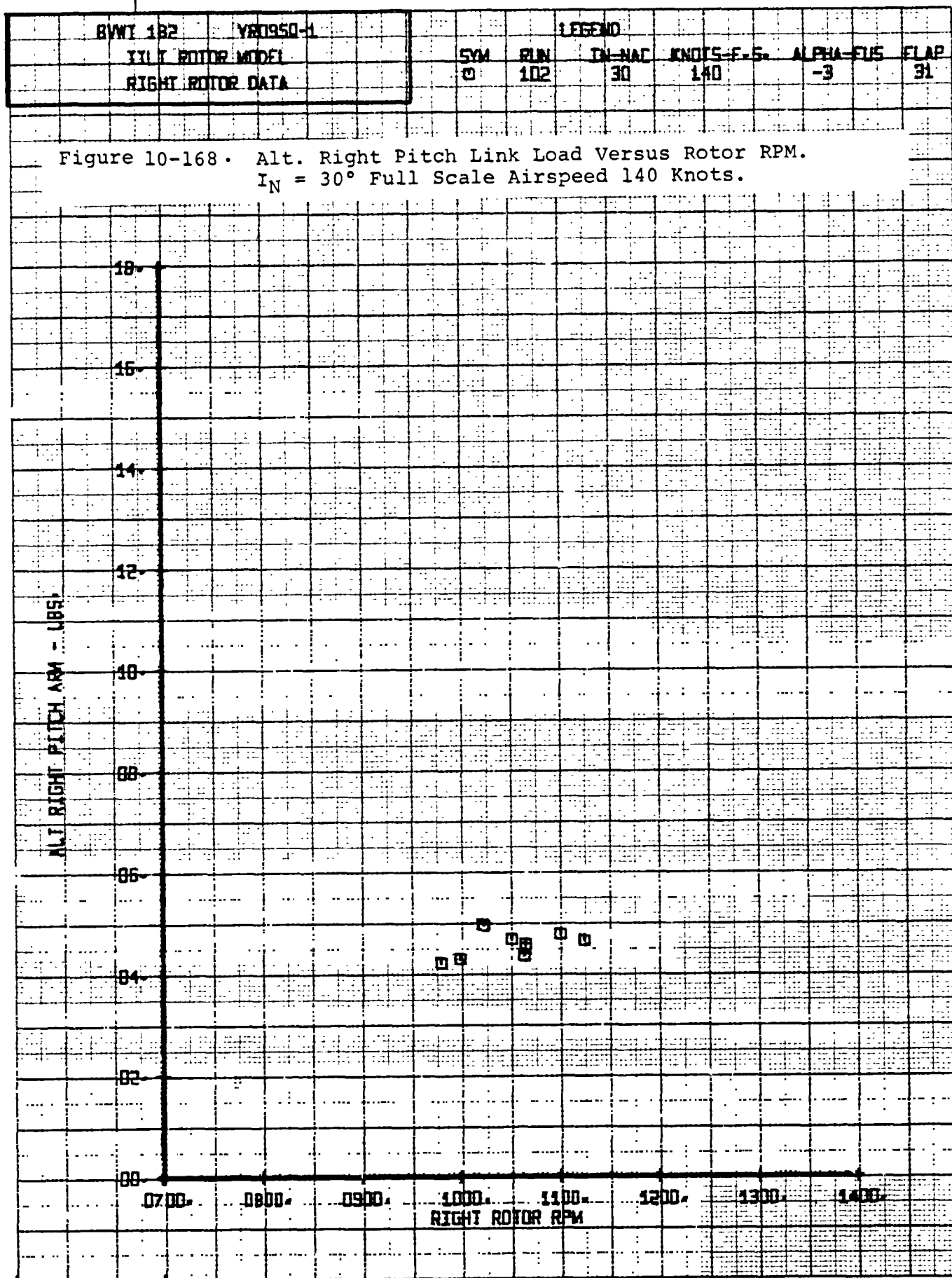


Figure 10-166. Alt. Right Chord Bending Versus Rotor RPM.
 $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.

| | | | | | | | |
|------------------|----------|--------|--------|------------|-----------|------|----|
| BVWT 182 | VR0950-1 | LEGEND | | | | | |
| TILT ROTOR MODEL | | SYM | IN-NAC | KNOTS-F.S. | ALPHA-DEG | FLAP | |
| RIGHT ROTOR DATA | | □ | 102 | 30 | 140 | -3 | 31 |

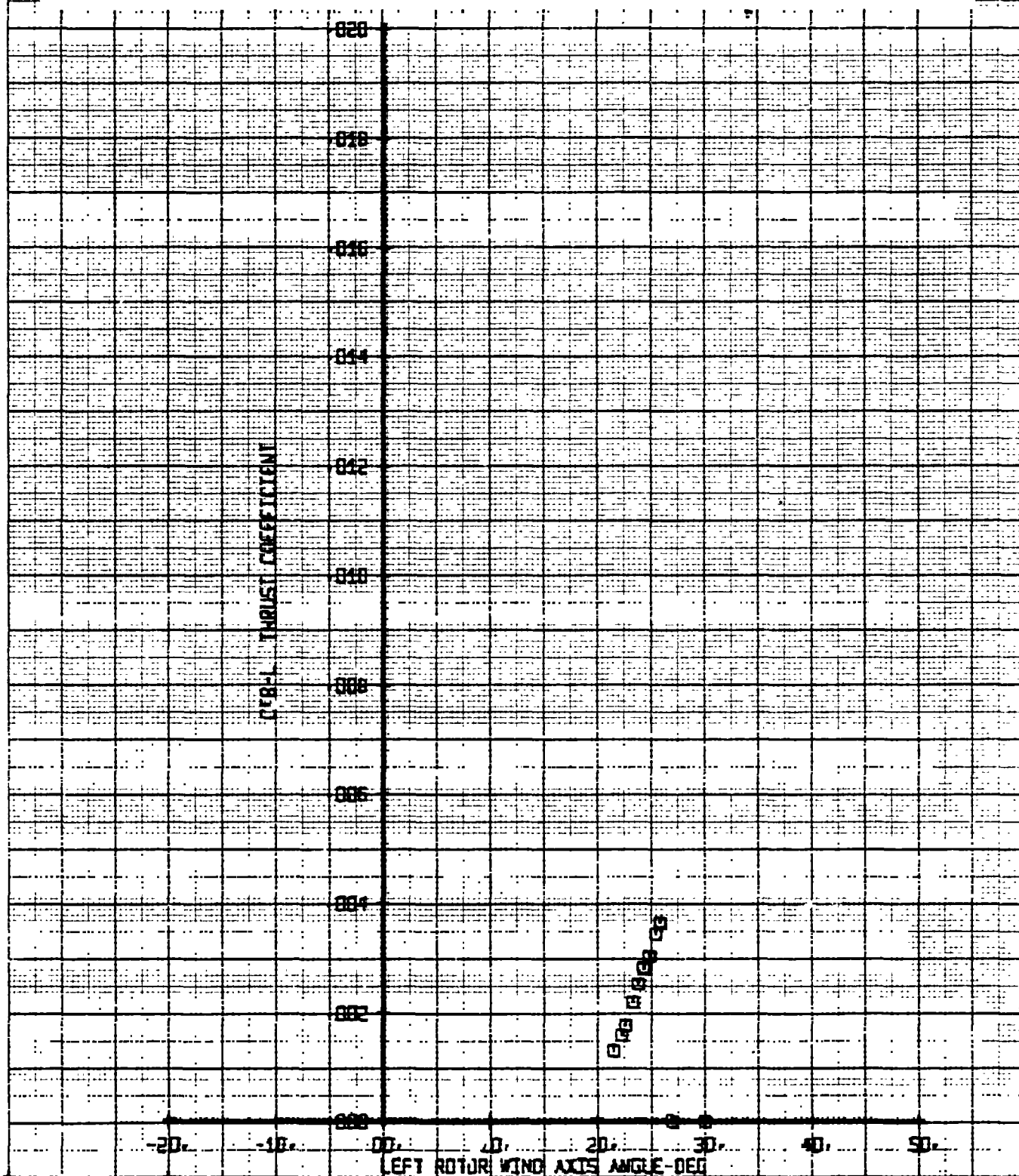
Figure 10-167. Alt. Right Flap Bending Versus Rotor RPM.
 $I_N = 30^\circ$ Full Scale Airspeed 140 Knots.





| | | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|------|
| BYWT 182 | VR0980-1 | LEGEND | | | | | |
| TILT ROTOR MODEL | | SYM | RUN | IN-HAC | KNOTS-F.S. | ALPHA-DEG | FLAP |
| LEFT ROTOR DATA | | □ | 111 | 30 | 180 | VARY | 31 |

Figure 11-001. Left Rotor Thrust Coefficient Versus Angle of Attack. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.



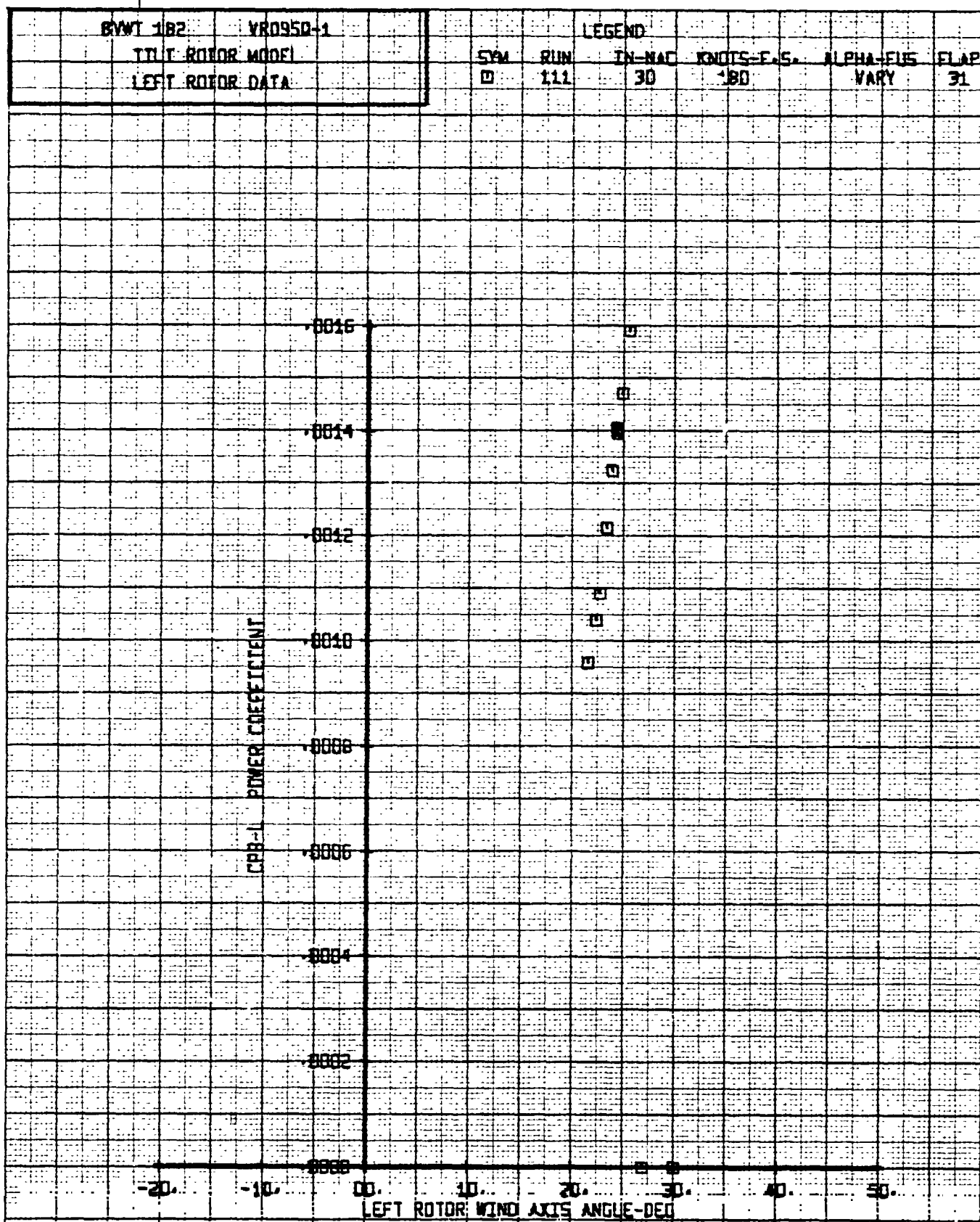


Figure 11-002. Left Rotor Power Coefficient Versus Angle of Attack. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.

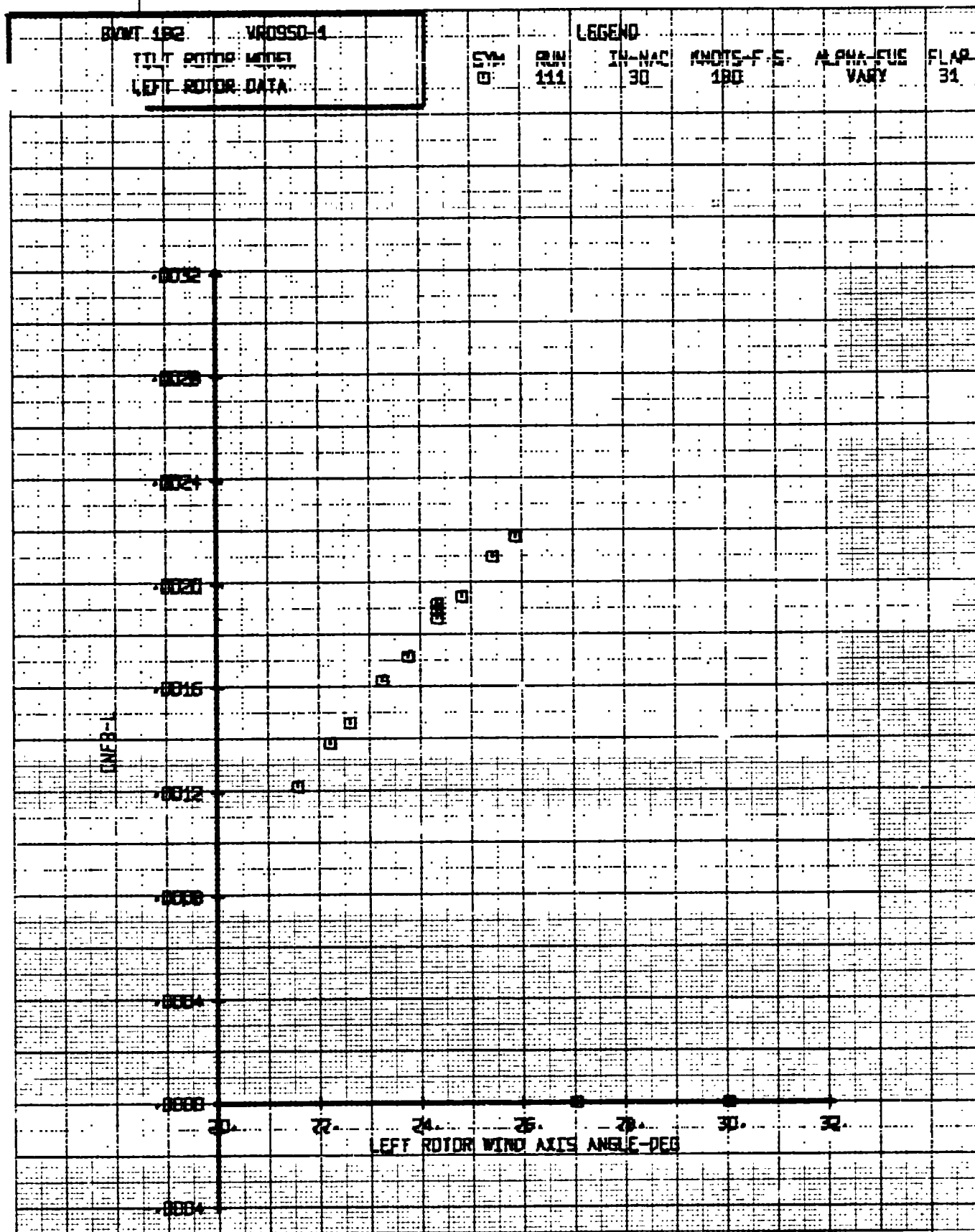


Figure 11-003. Left Rotor Normal Force Coefficient Versus Angle of Attack. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.

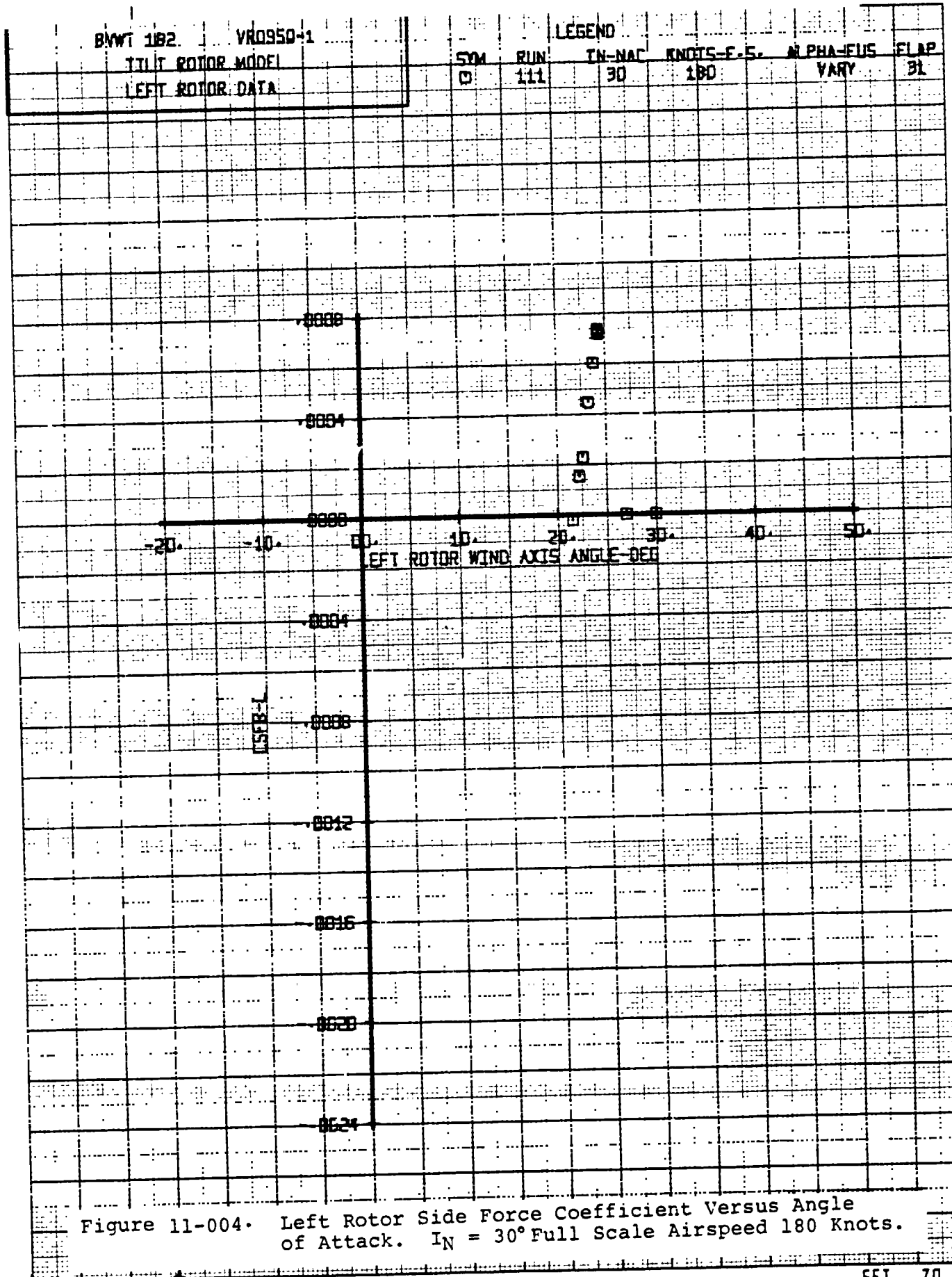
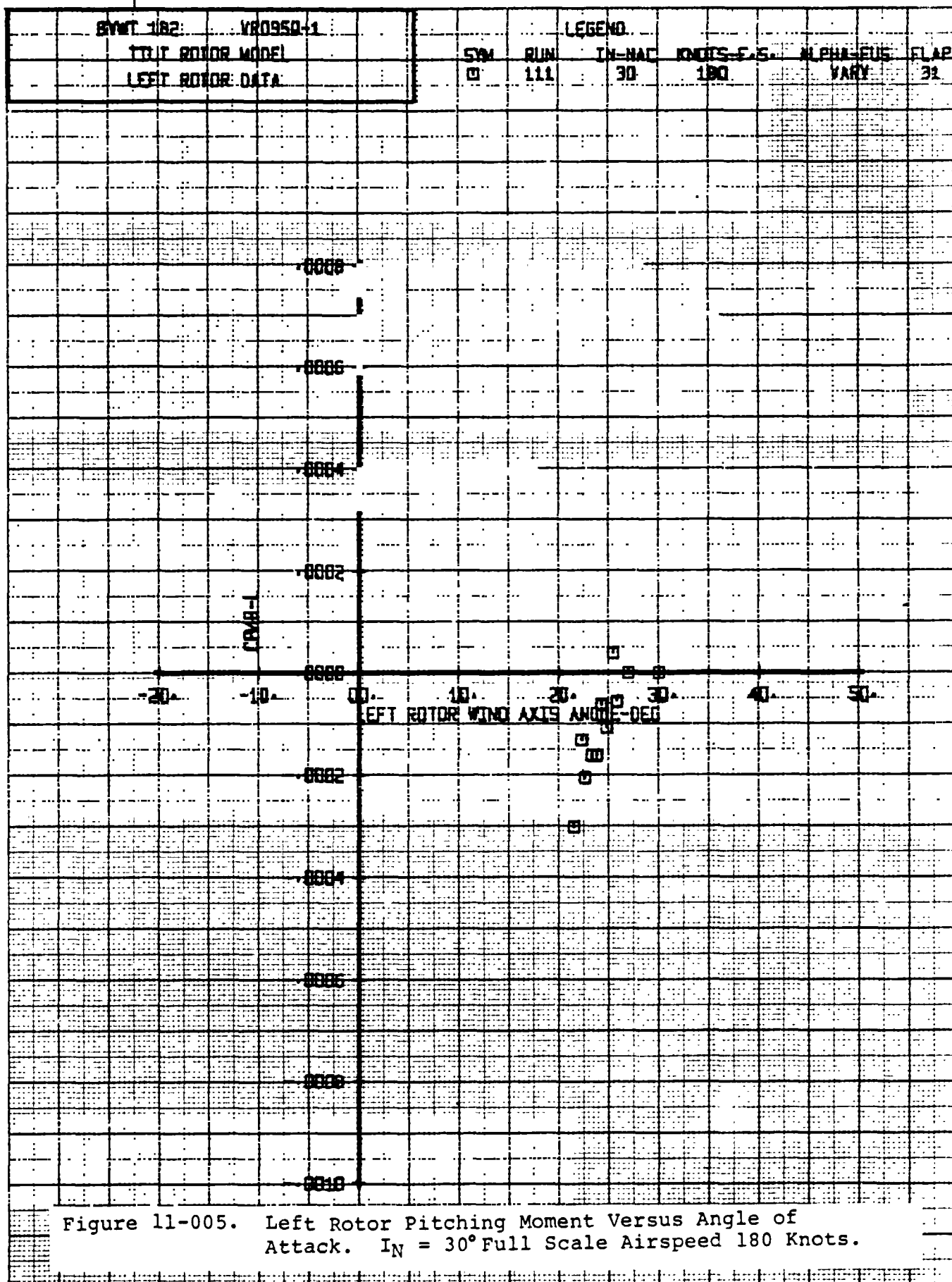
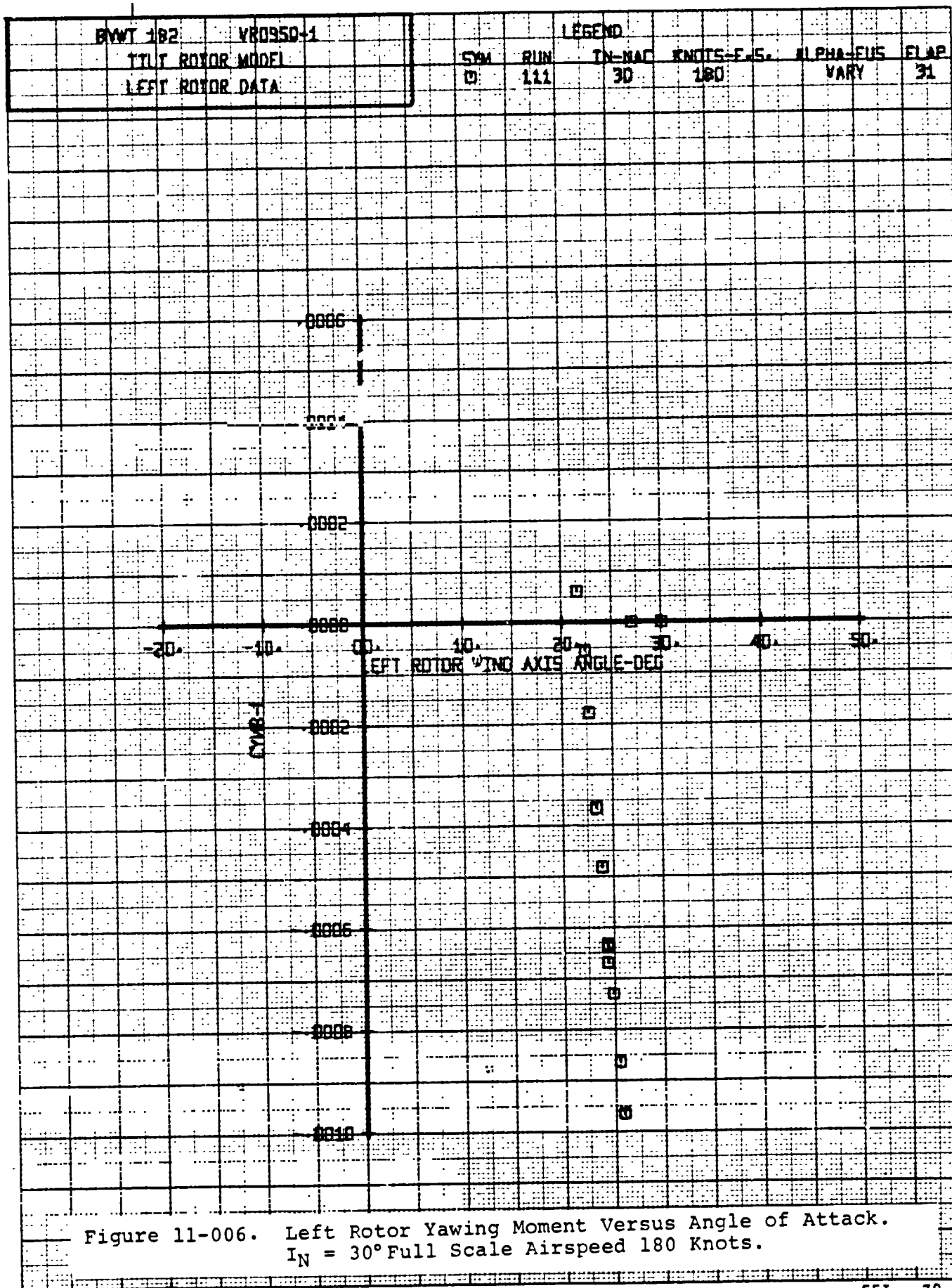


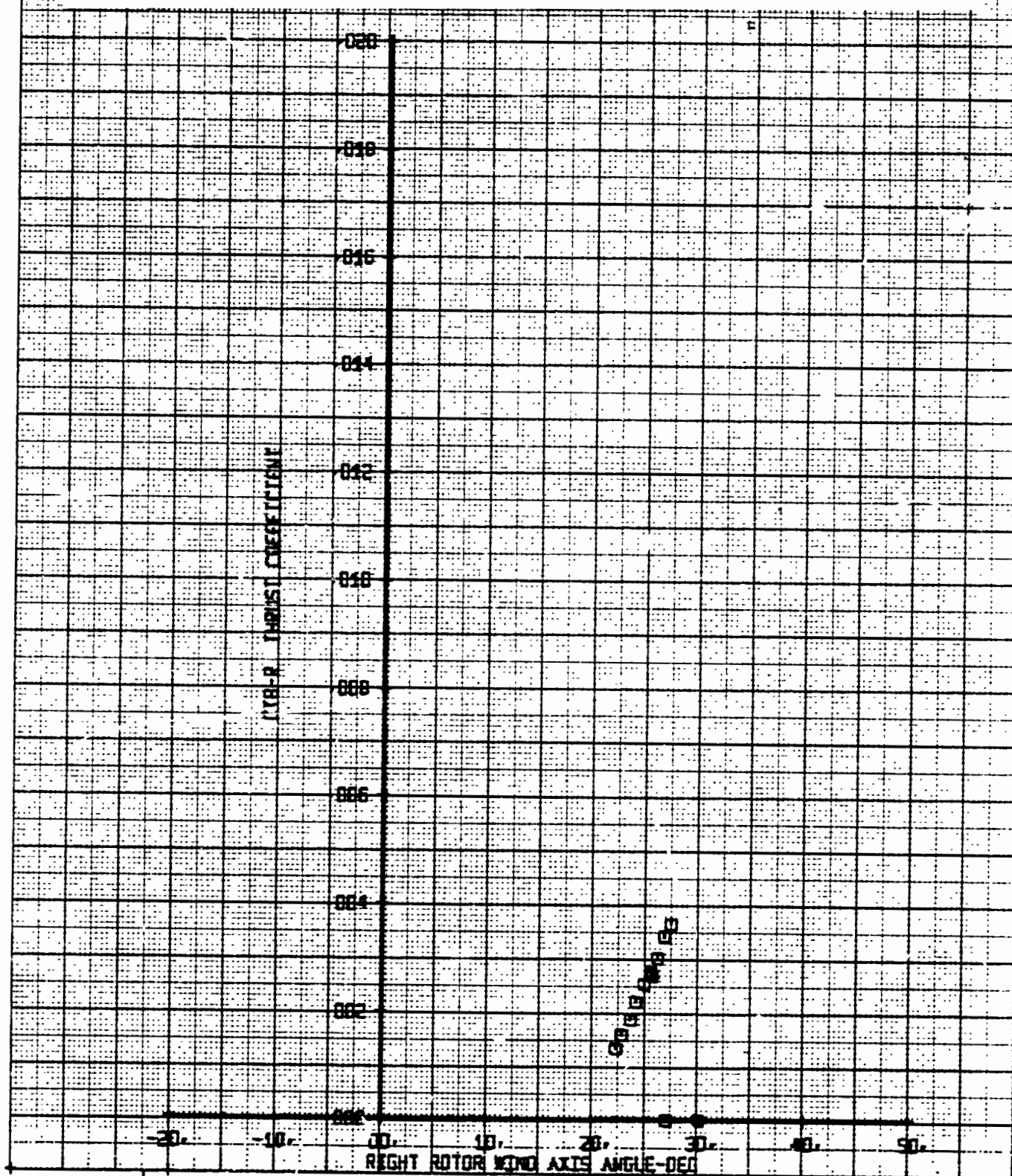
Figure 11-004. Left Rotor Side Force Coefficient Versus Angle of Attack. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.





| | | | | | | | | | |
|------------------|--|---------|--|--------|-----|--------|------------|-----------|------|
| SVWT 182 | | YR050-1 | | LEGEND | | | | | |
| RIGHT ROTOR DATA | | | | SYM | RUN | IN-IMP | KNOTS-F.S. | ALPHA-DEG | FLAP |
| | | | | 0 | 111 | 30 | 180 | VARY | 31 |

Figure 11-007. Right Rotor Thrust Coefficient Versus Angle of Attack. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.



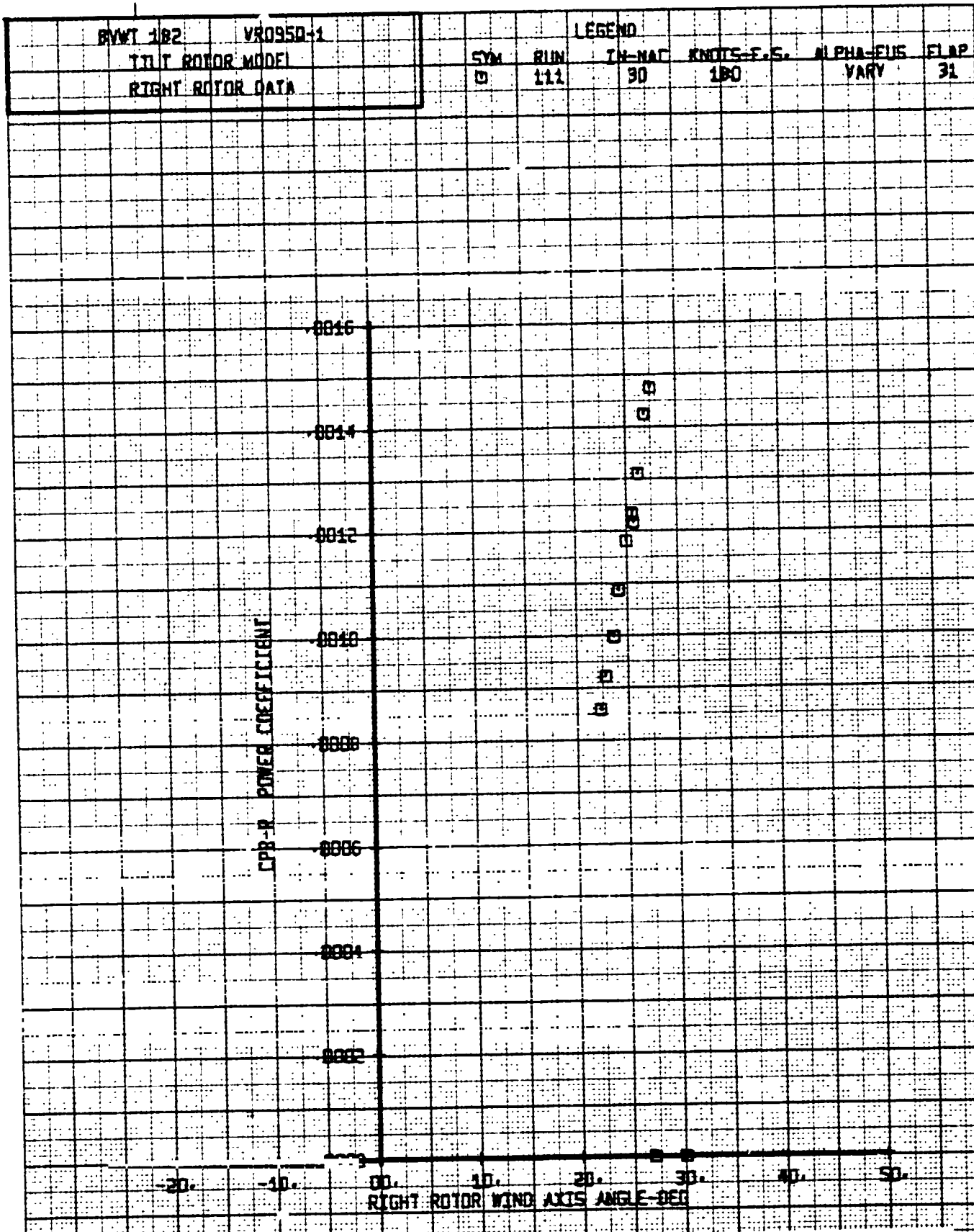
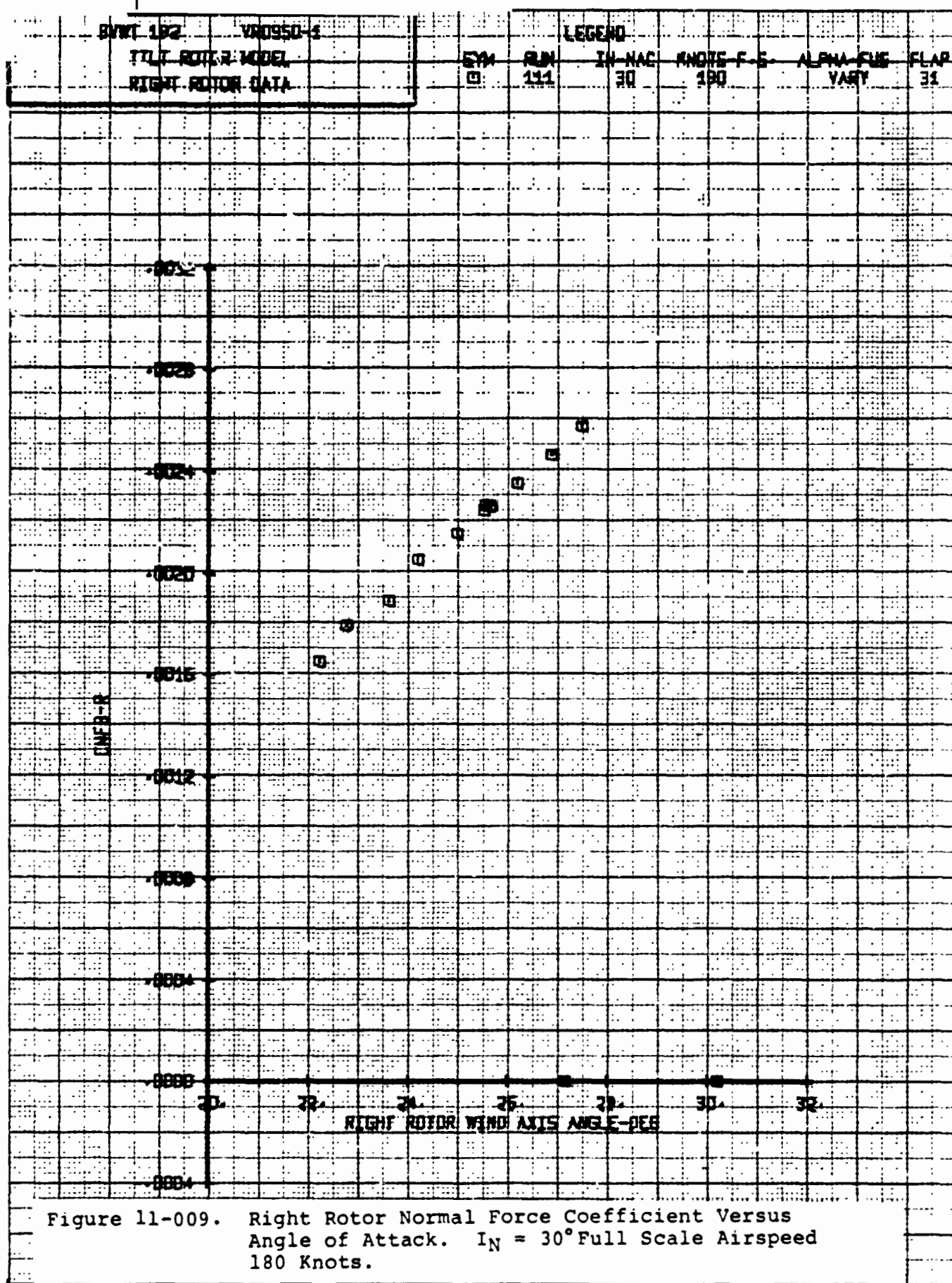
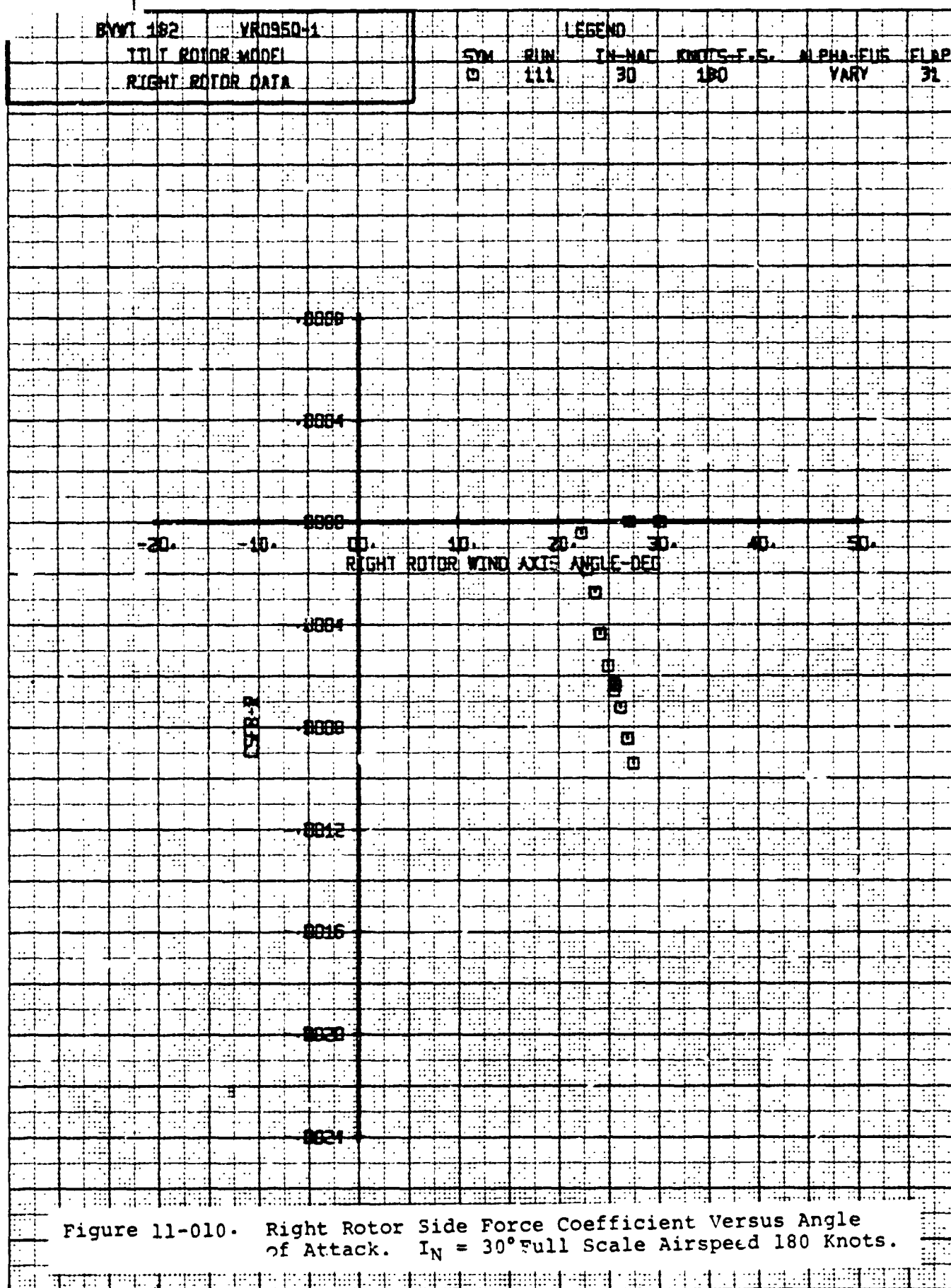


Figure 11-008. Right Rotor Power Coefficient Versus Angle of Attack. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.





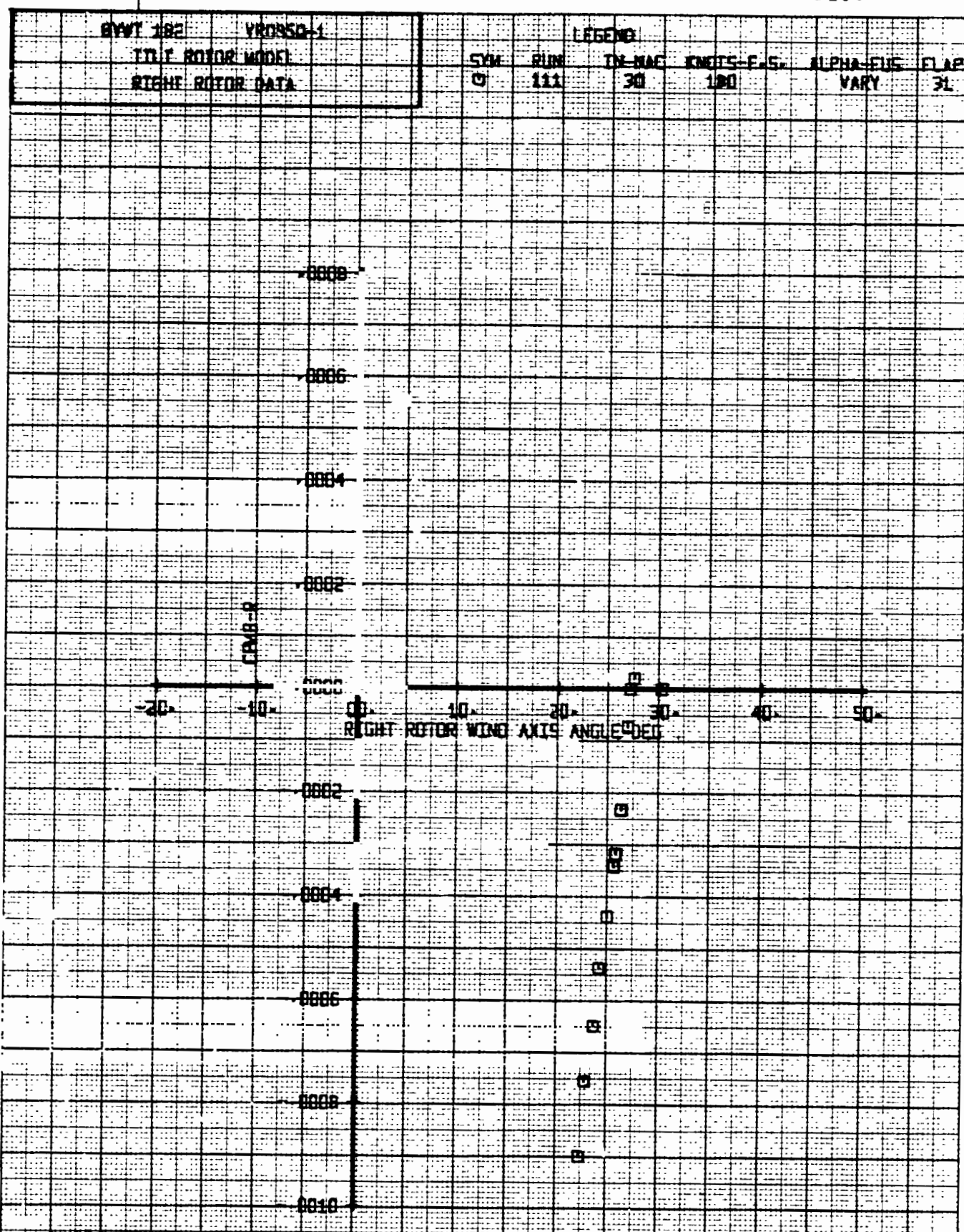
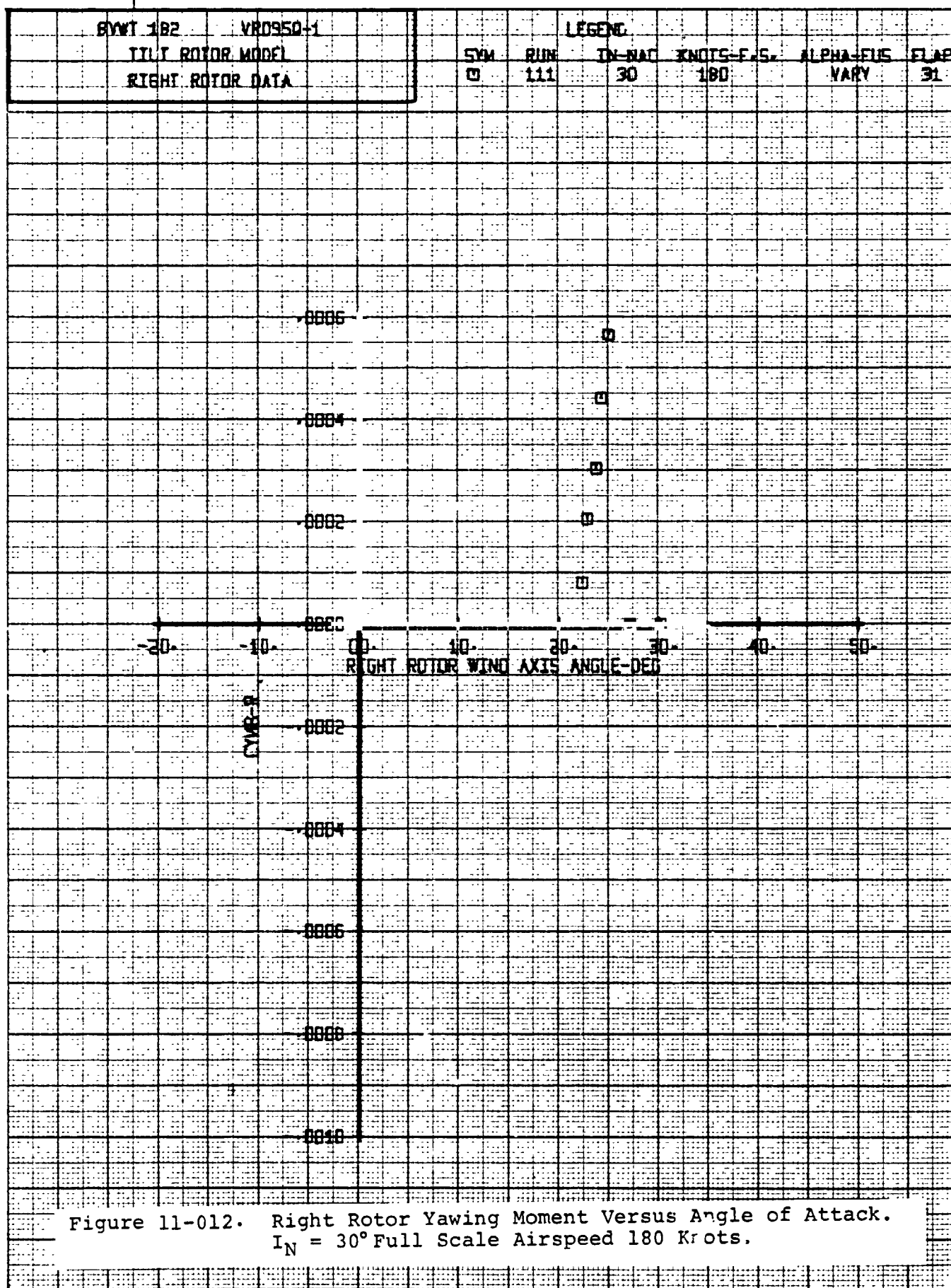
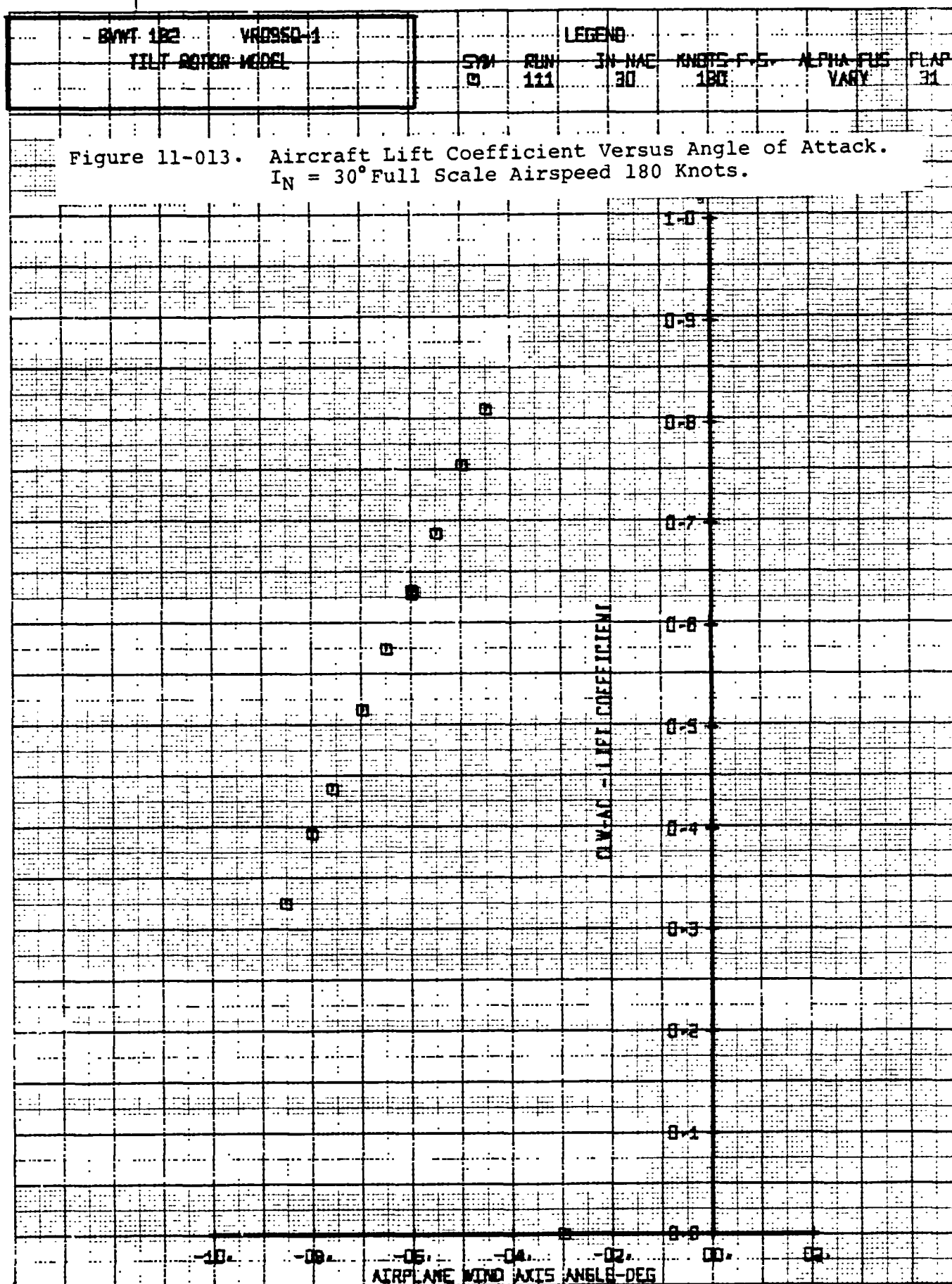


Figure 11-011. Right Rotor Pitching Moment Versus Angle of Attack. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.





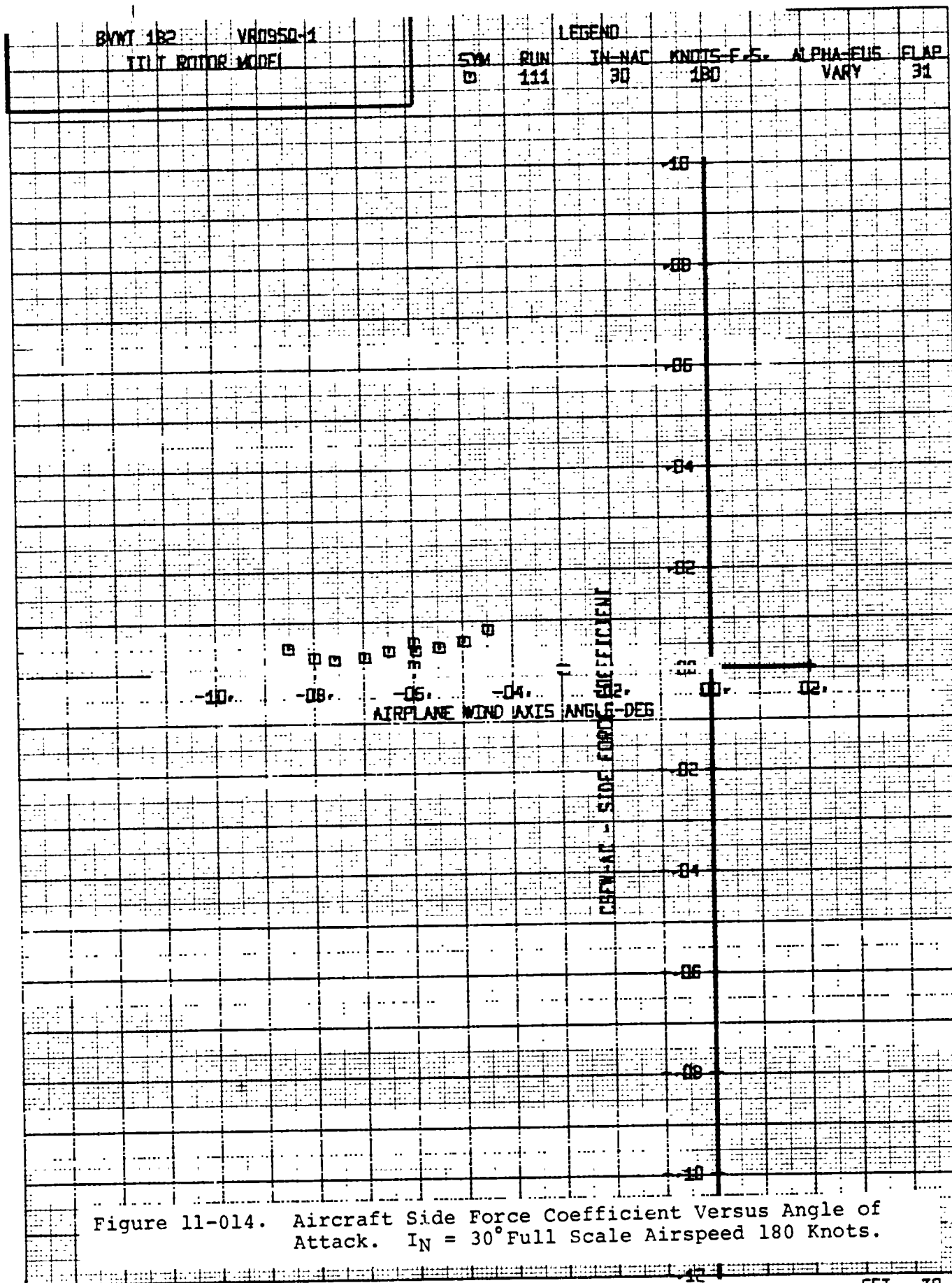
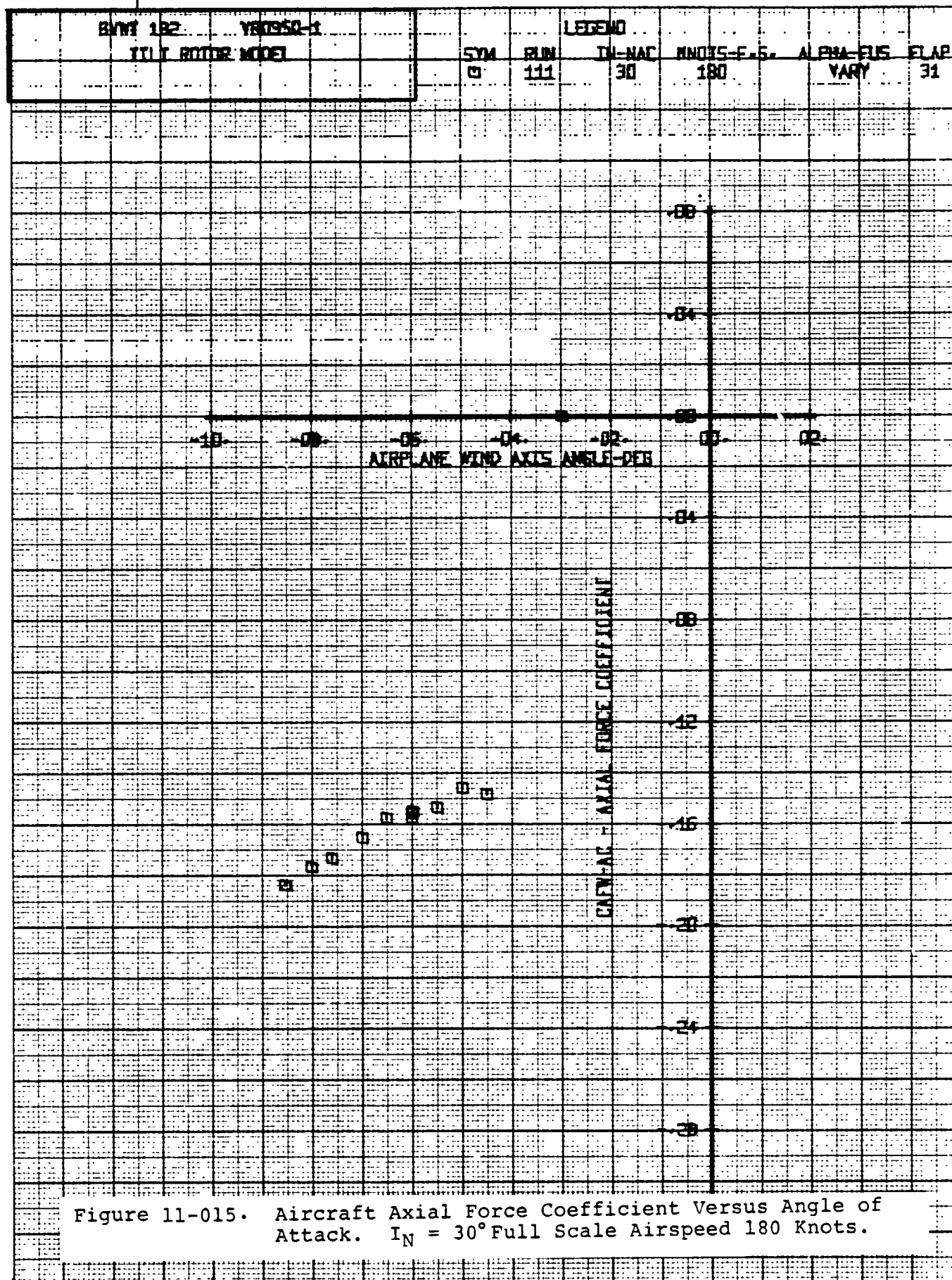
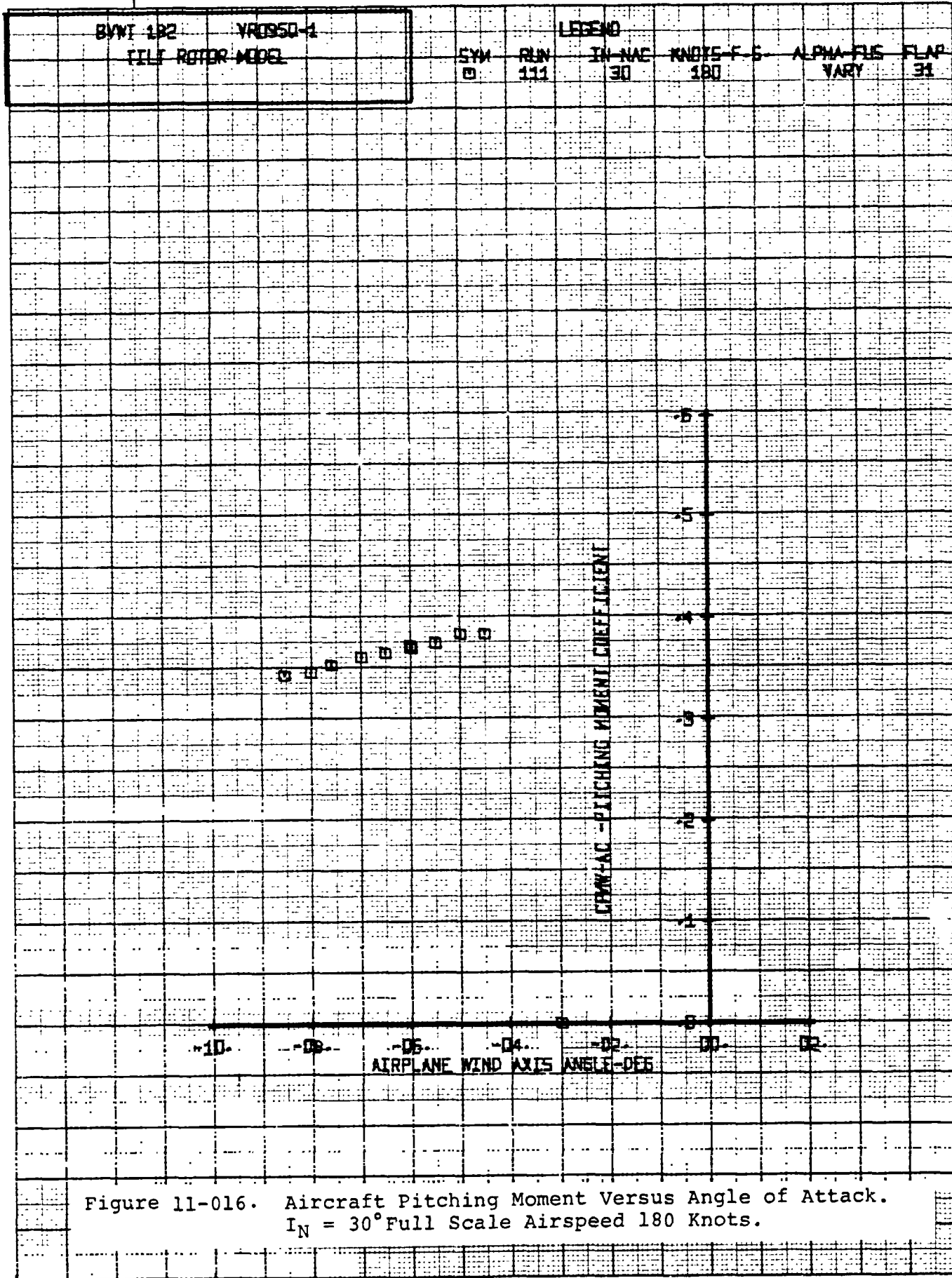


Figure 11-014. Aircraft Side Force Coefficient Versus Angle of Attack. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.





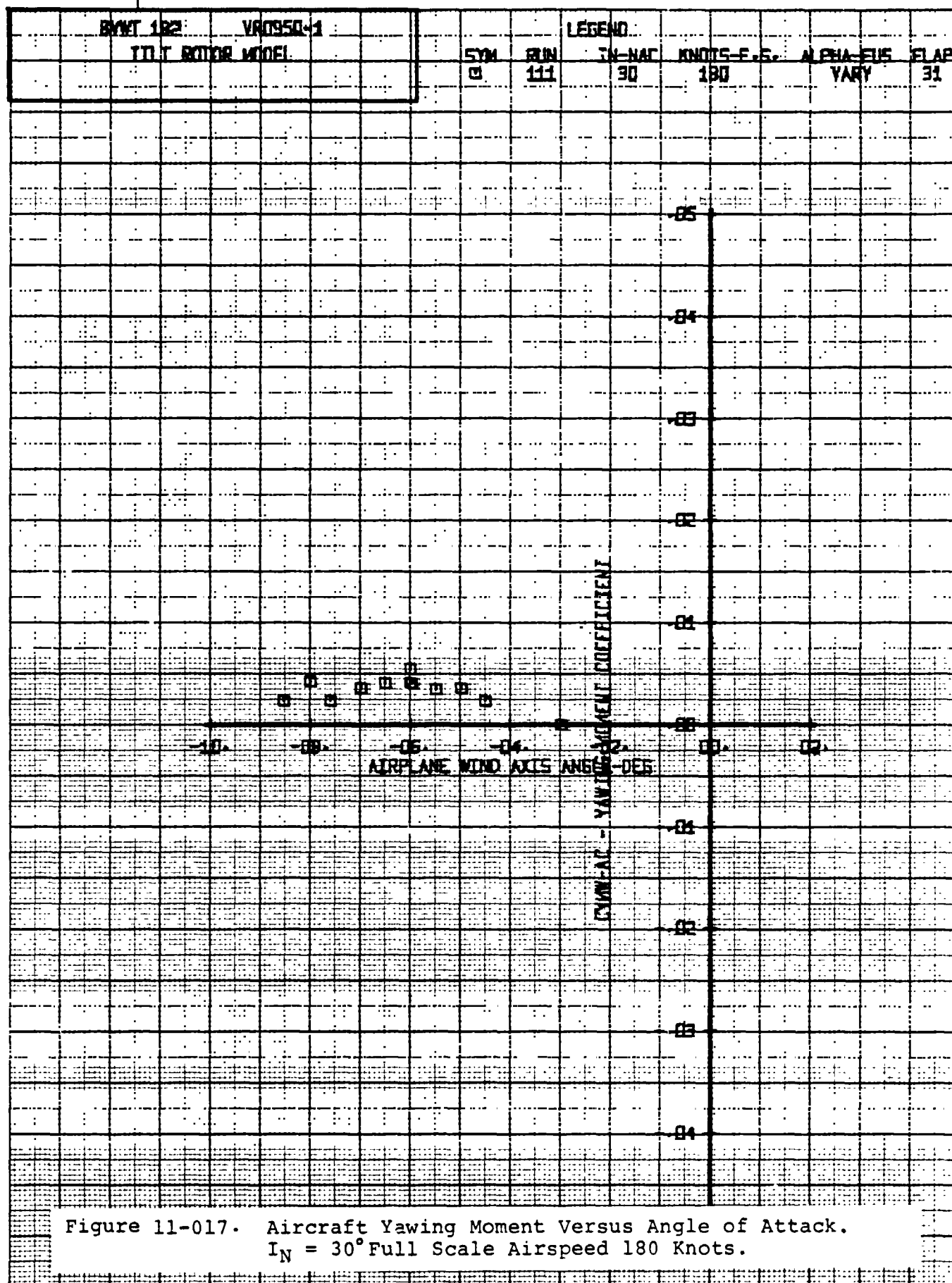


Figure 11-017. Aircraft Yawing Moment Versus Angle of Attack.
 $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.

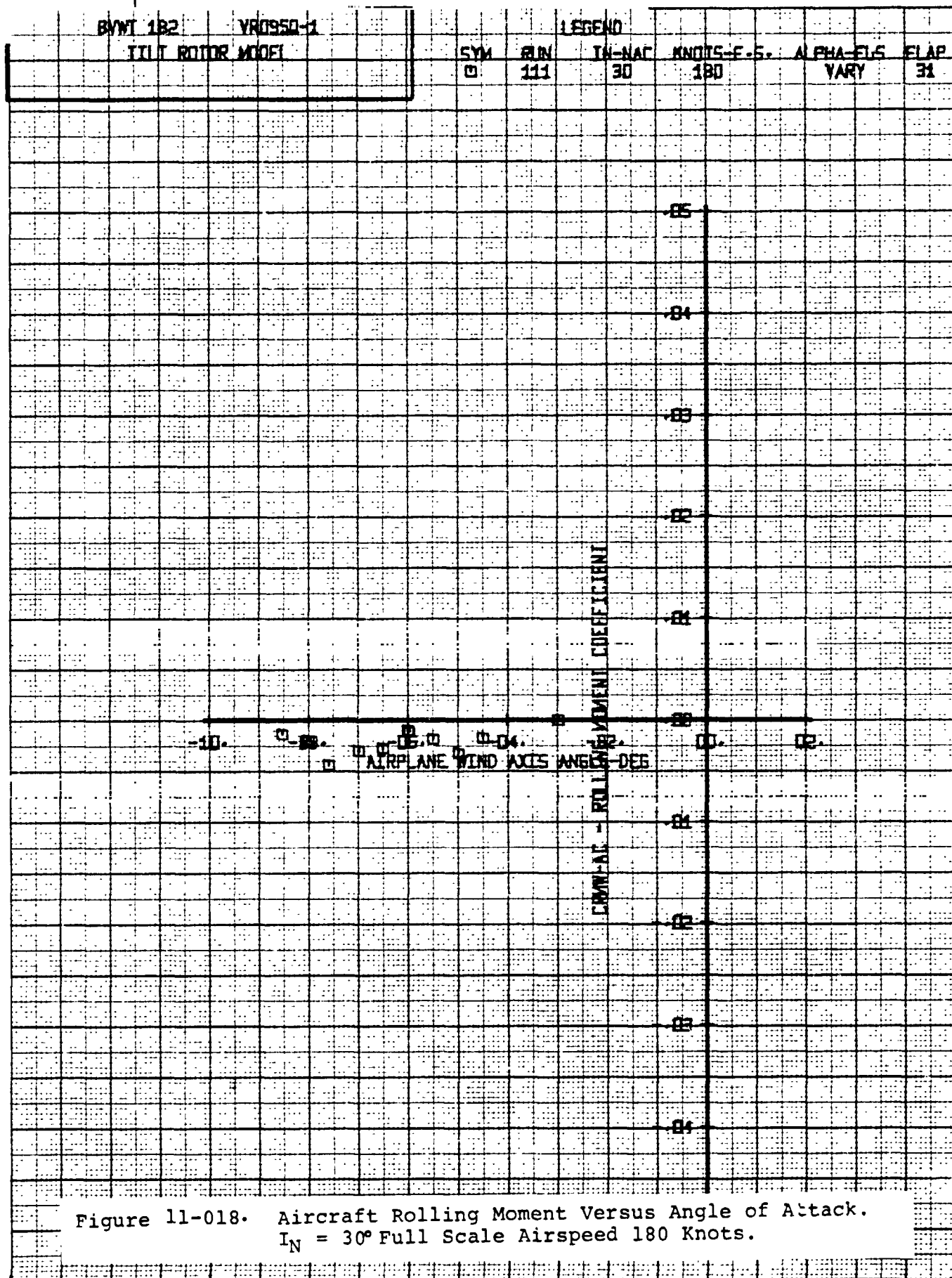


Figure 11-018. Aircraft Rolling Moment Versus Angle of Attack.
 $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.

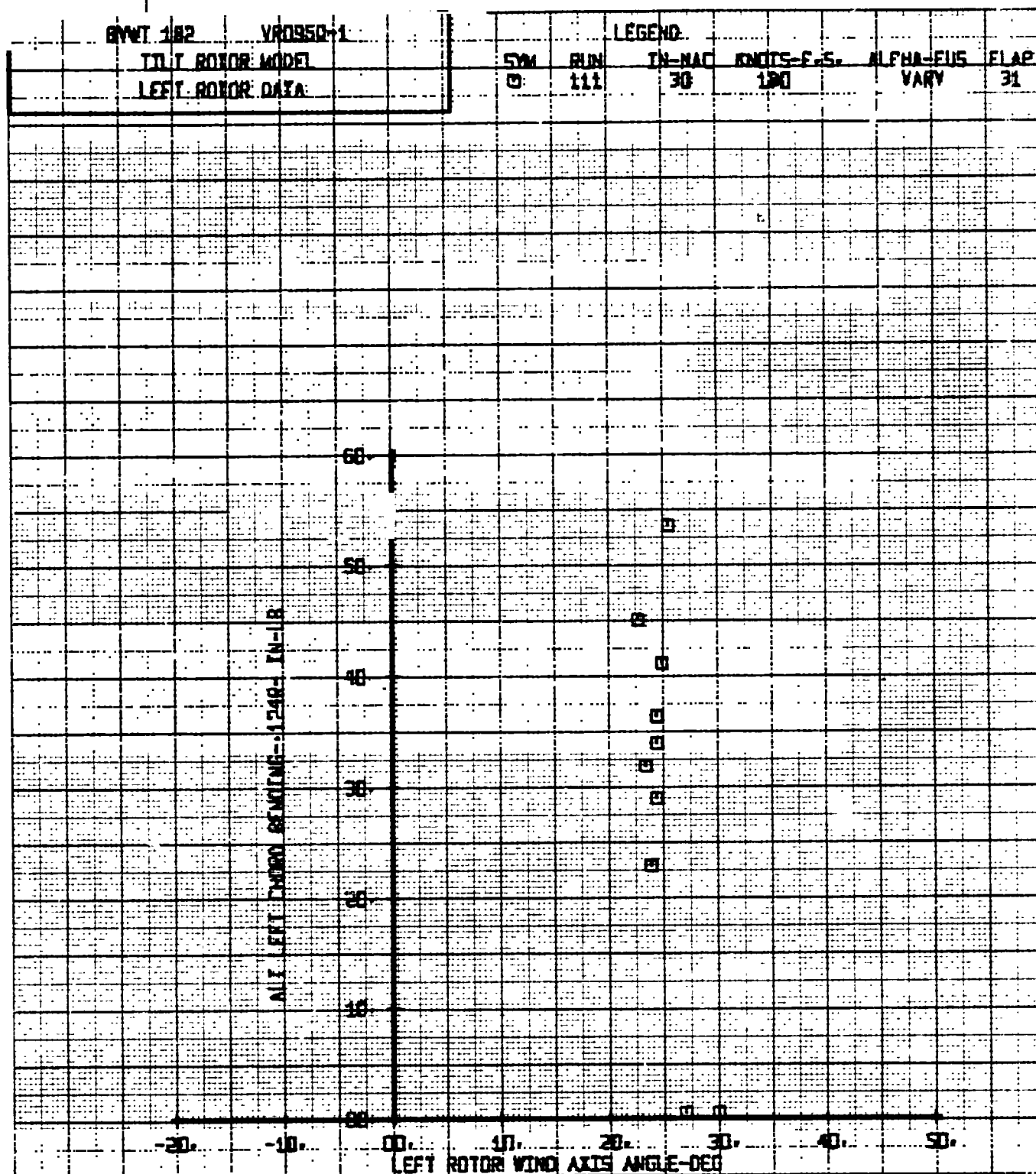
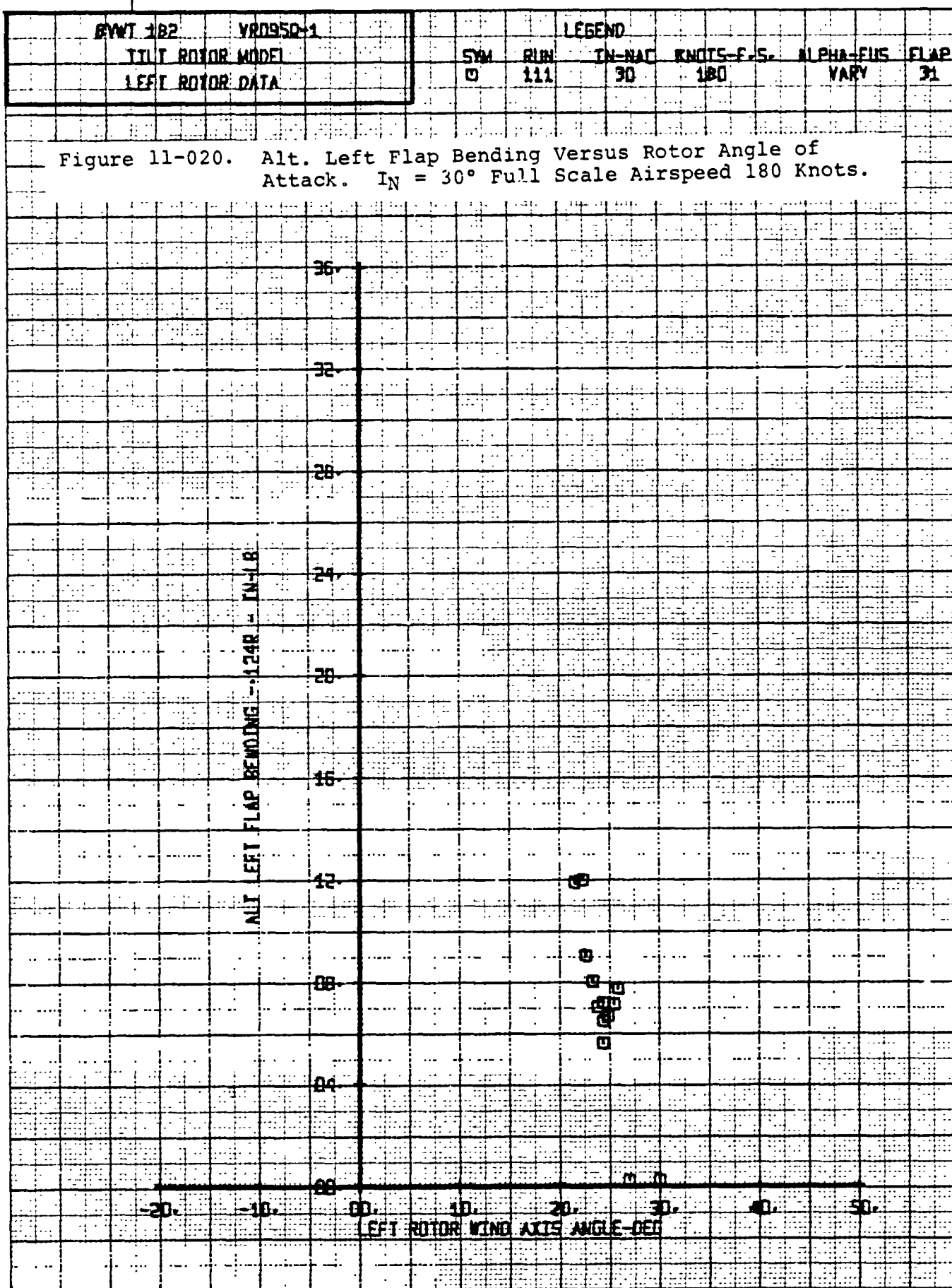
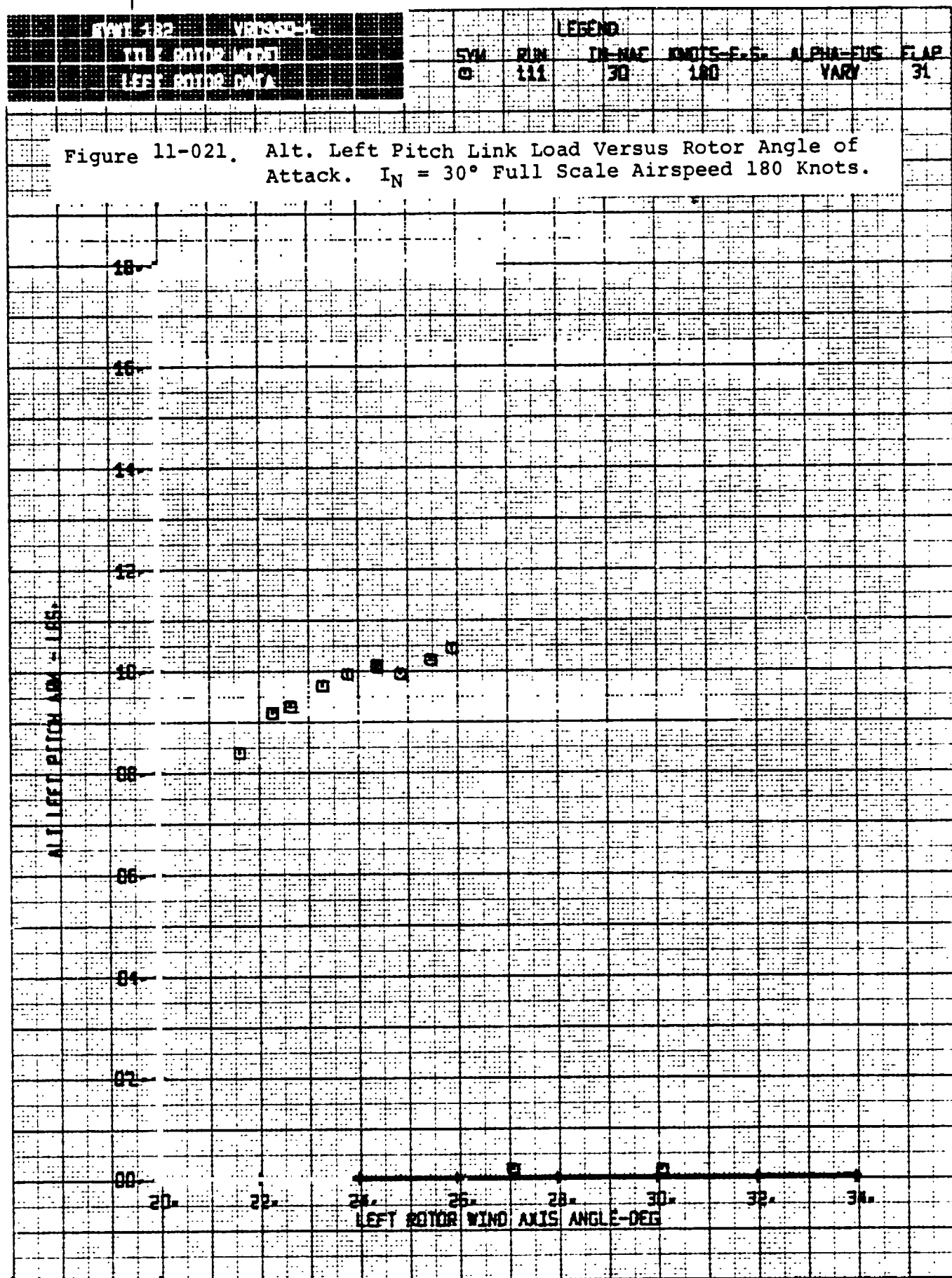


Figure 11-019. Alt. Left Chord Bending Versus Rotor Angle of Attack. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.





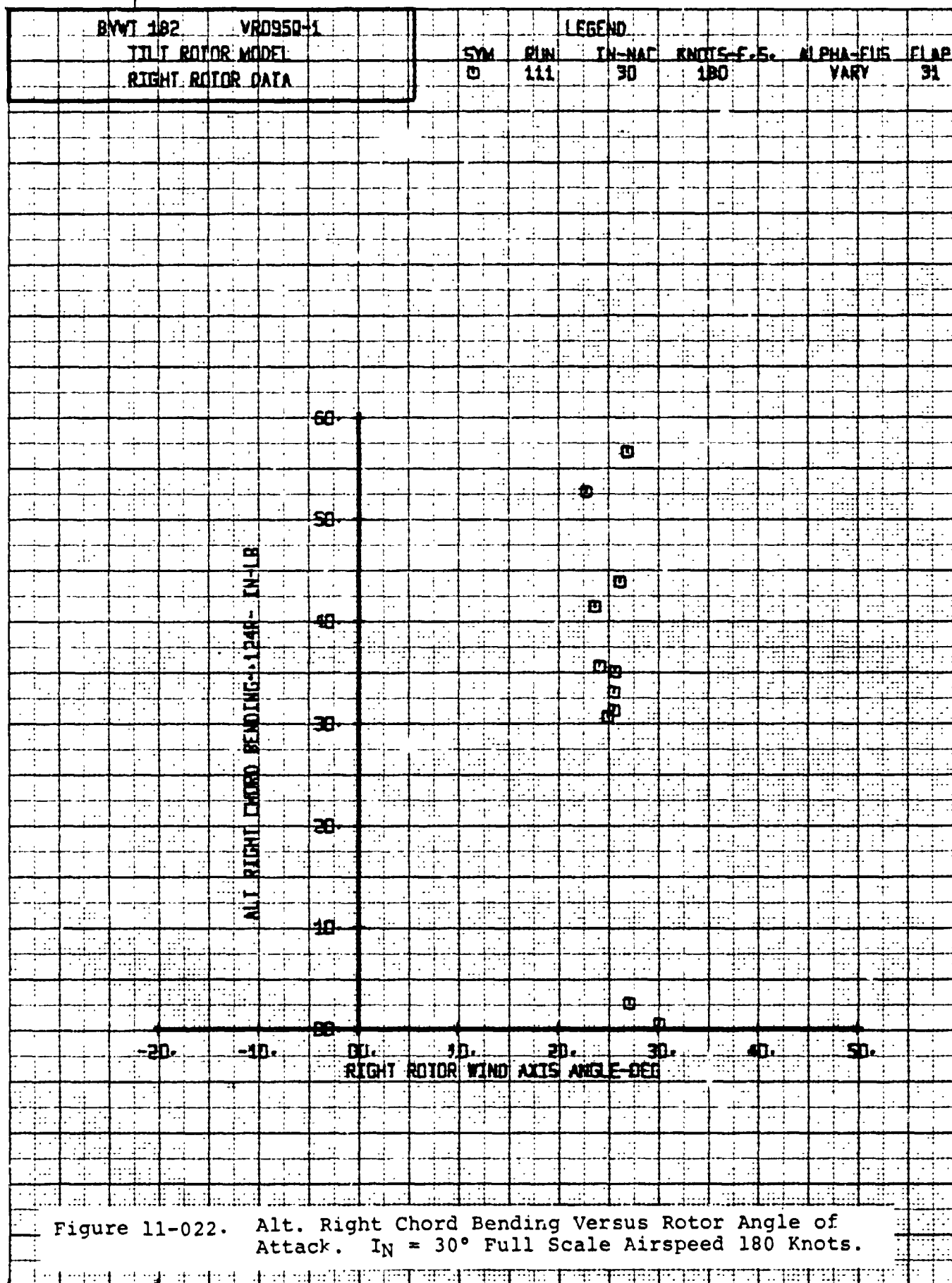
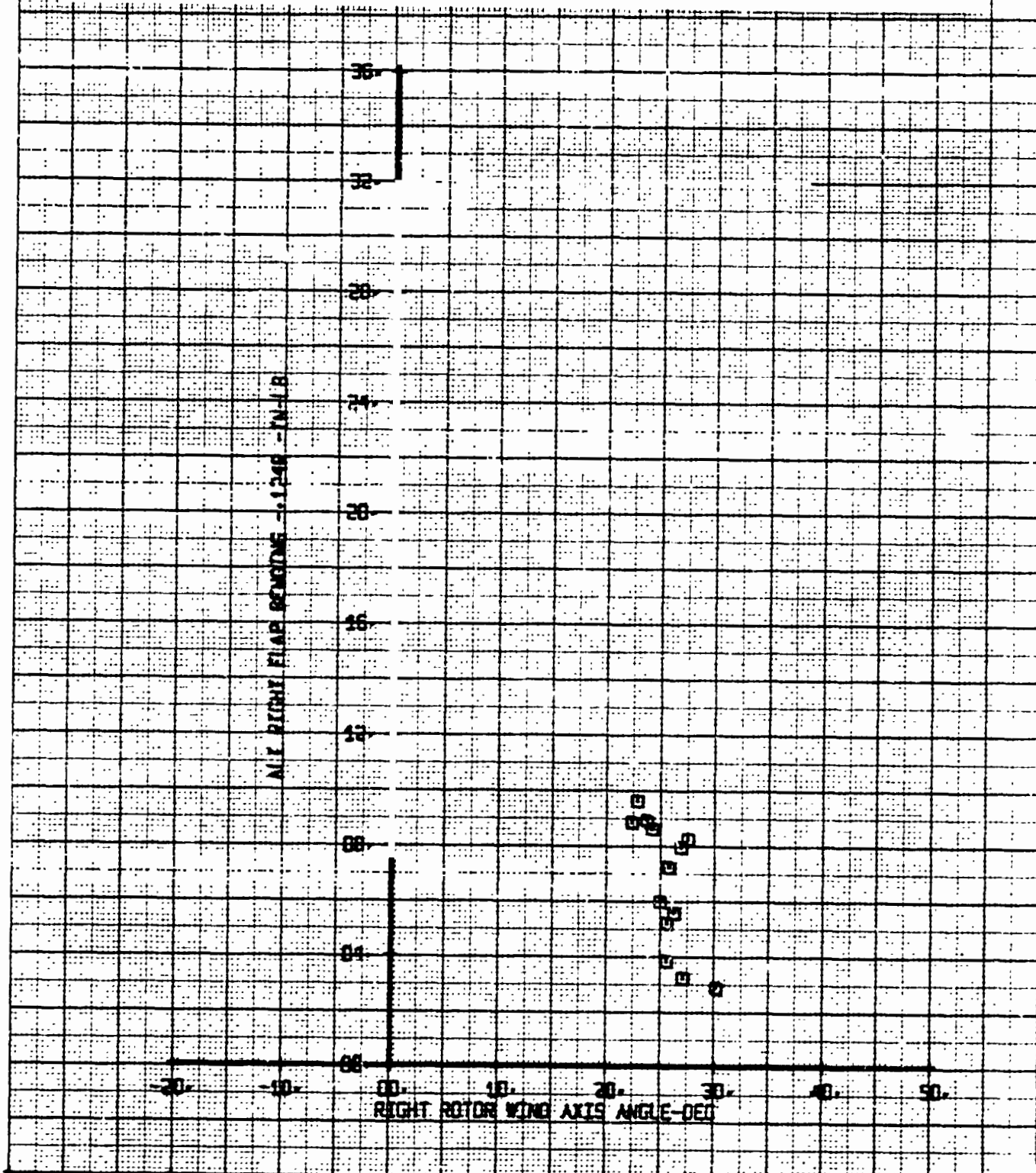


Figure 11-022. Alt. Right Chord Bending Versus Rotor Angle of Attack. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.

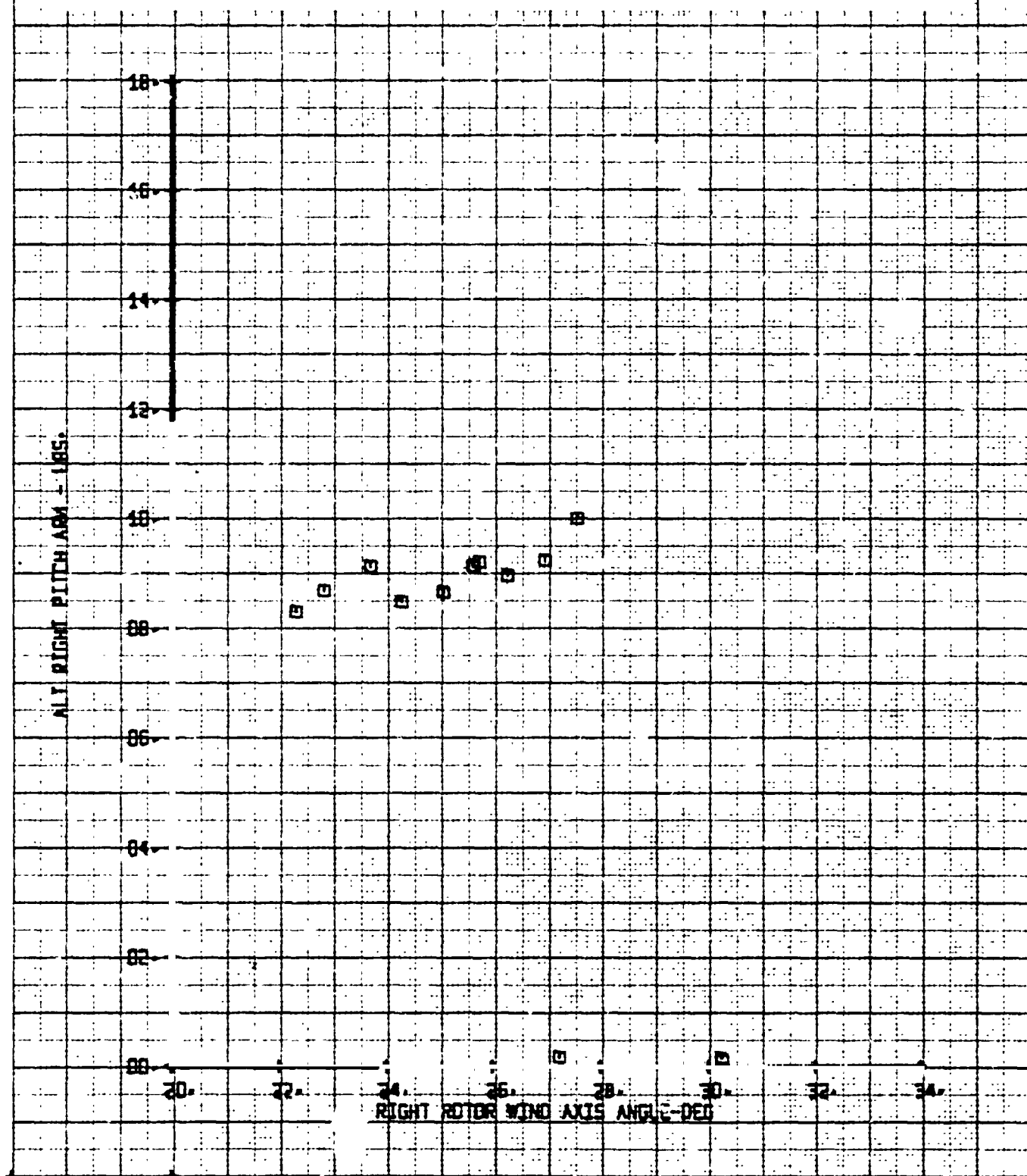
| | | | | | | | | |
|-------------------|----------|--------|-----|--------|------------|-----------|------|--|
| SVWT 182 | VR0550-1 | LEGEND | | | | | | |
| ITL 7 ROTOR MODEL | | SYM | FLN | IN-WAG | KNOTS-F.S. | ALPHA-DEG | FLAP | |
| STEHE ROTOR DATA | | 0 | 111 | 30 | 180 | VARY | 31 | |

Figure 11-023. Alt. Right Flap Bending Versus Rotor Angle of Attack. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.



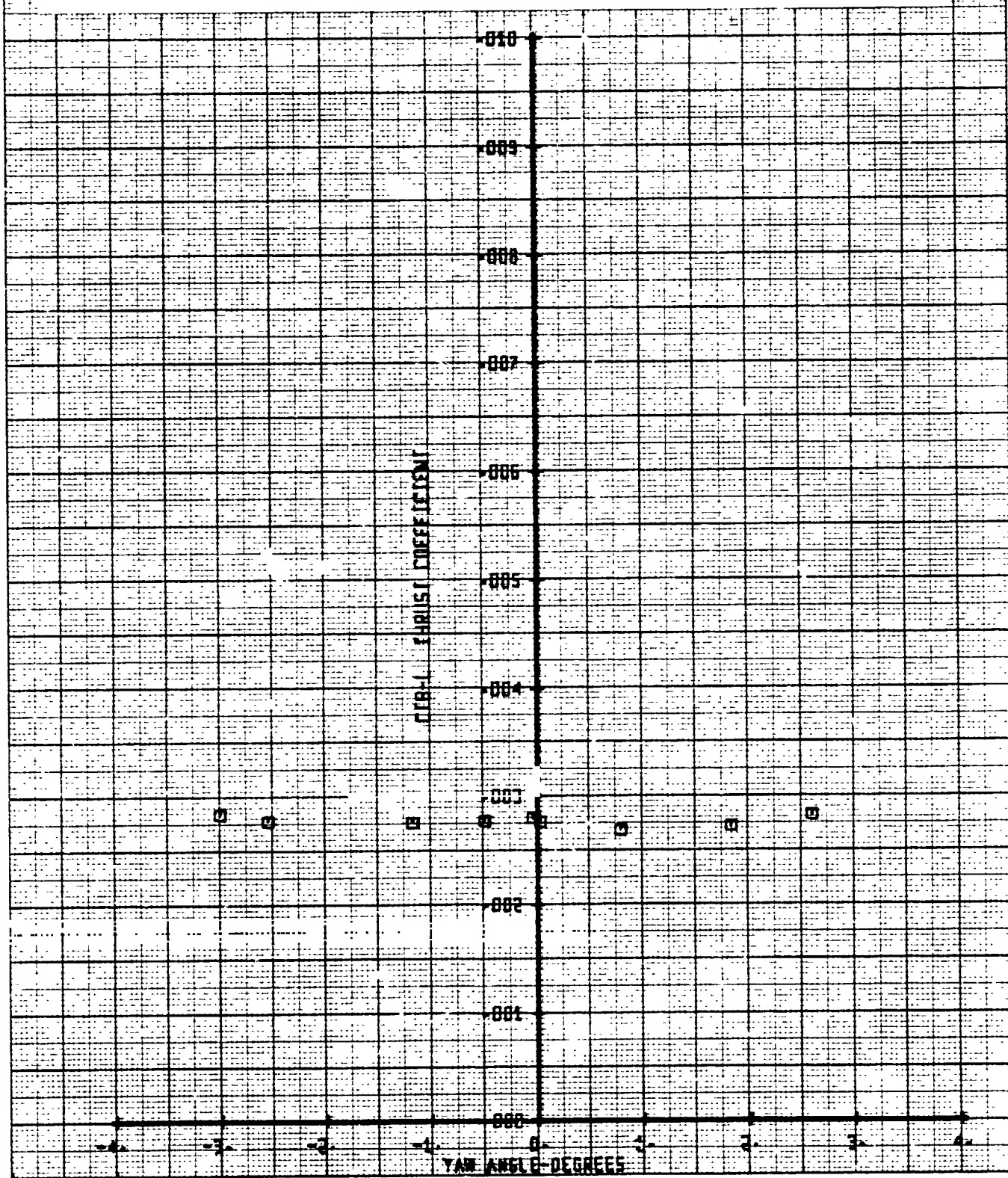
| | | | | | | |
|------------------|-----------|--------|-----|--------|------------|-----------|
| BYWT 182 | VRD 950-1 | LEGEND | | | | |
| TIT Rotor Model | | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FUS |
| RIGHT ROTOR DATA | | □ | 111 | 30 | 180 | VARY |
| | | | | | | FLAP 31 |

Figure 11-024. Alt. Right Pitch Link Load Versus Rotor Angle of Attack. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.



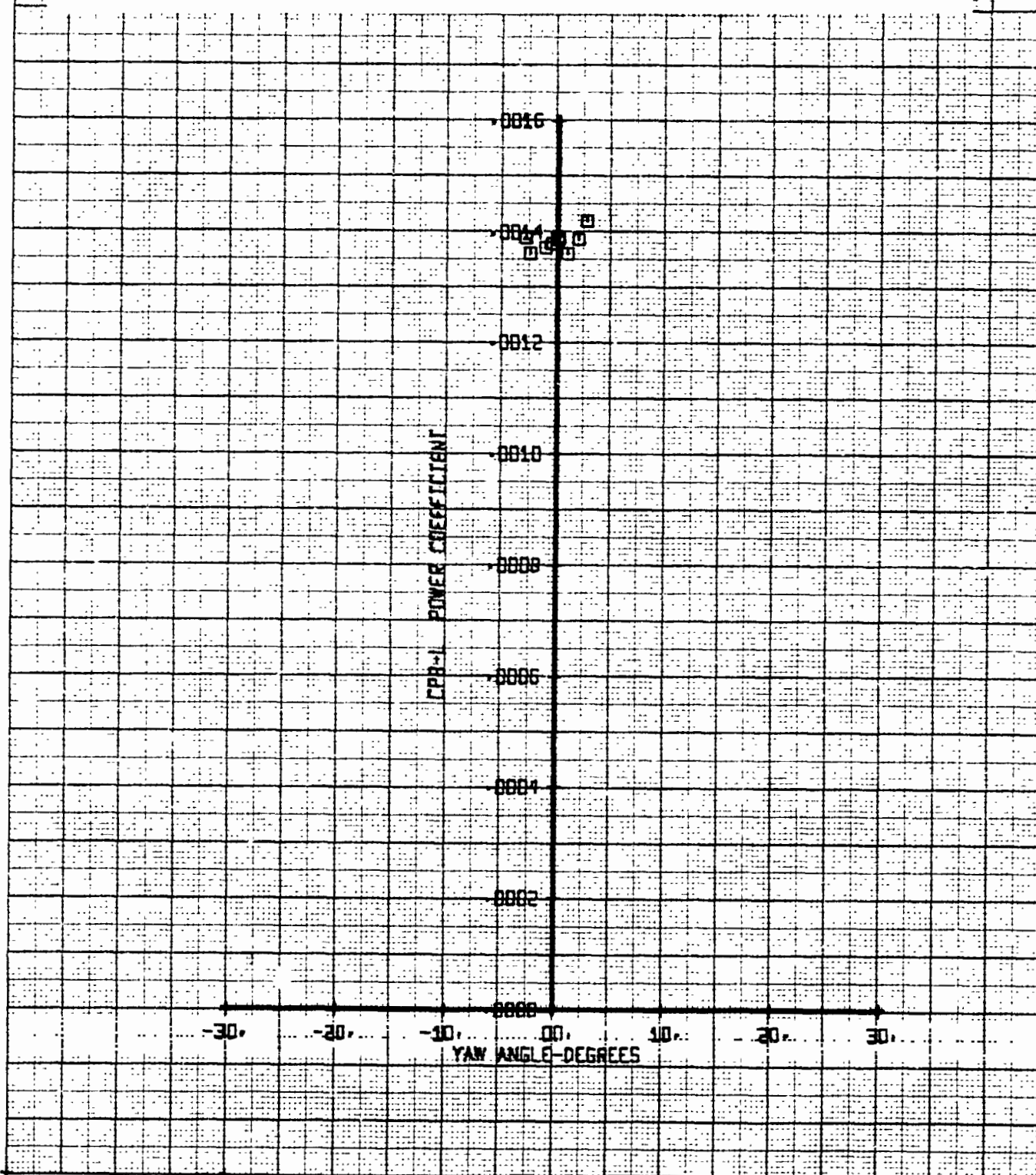
| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | VR0950-1 | LEGEND | | | | |
| T111 ROTOR MODEL | | SWA | RUN | IN-NAE | KNOTS-F.S. | ALPHA-FUS |
| LEFT ROTOR DATA | | 0 | 112 | 30 | 180 | -6 |
| | | | | FLAP | | 31 |

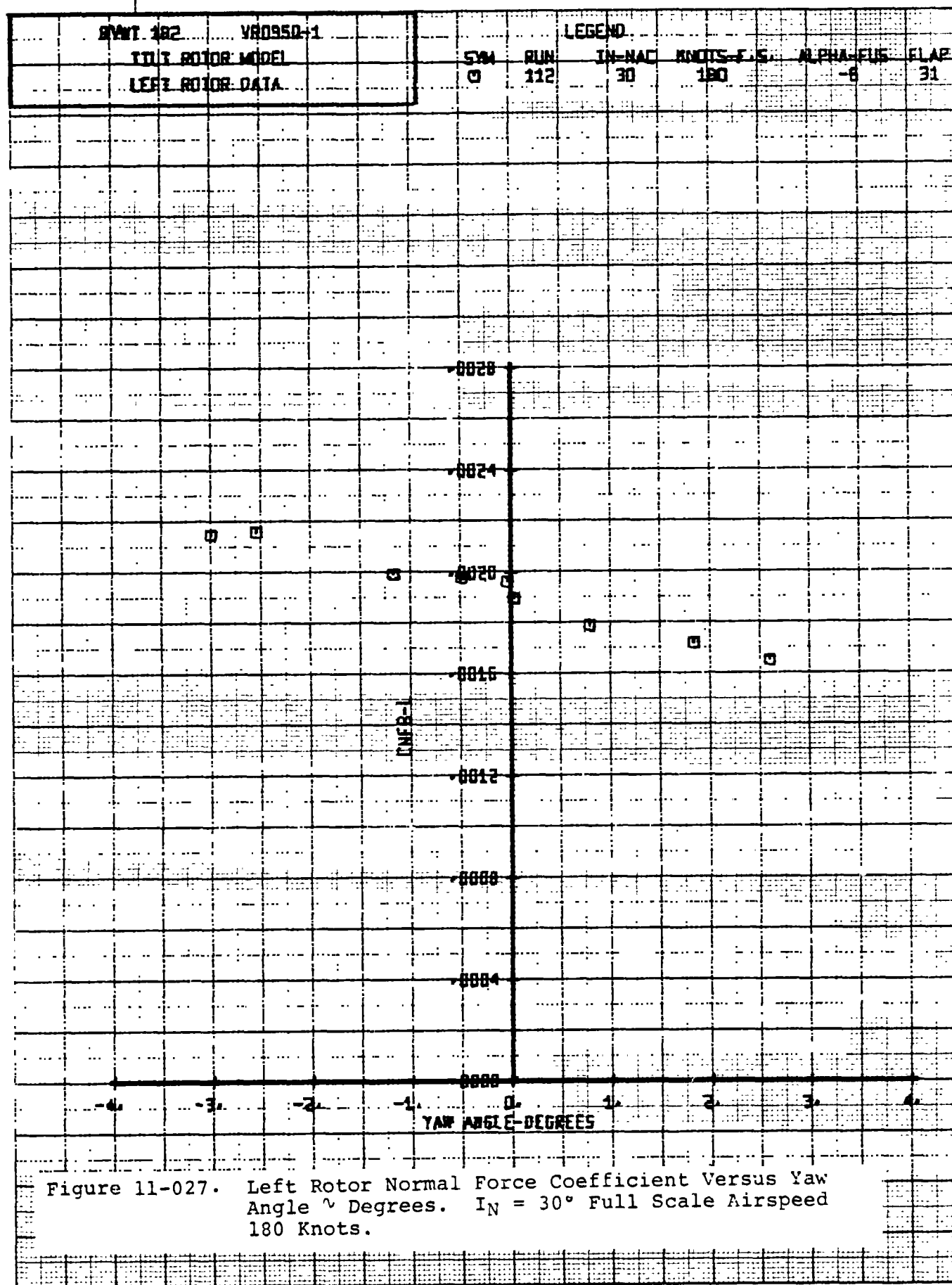
Figure 11-025. Left Rotor Thrust Coefficient Versus Yaw Angle γ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.

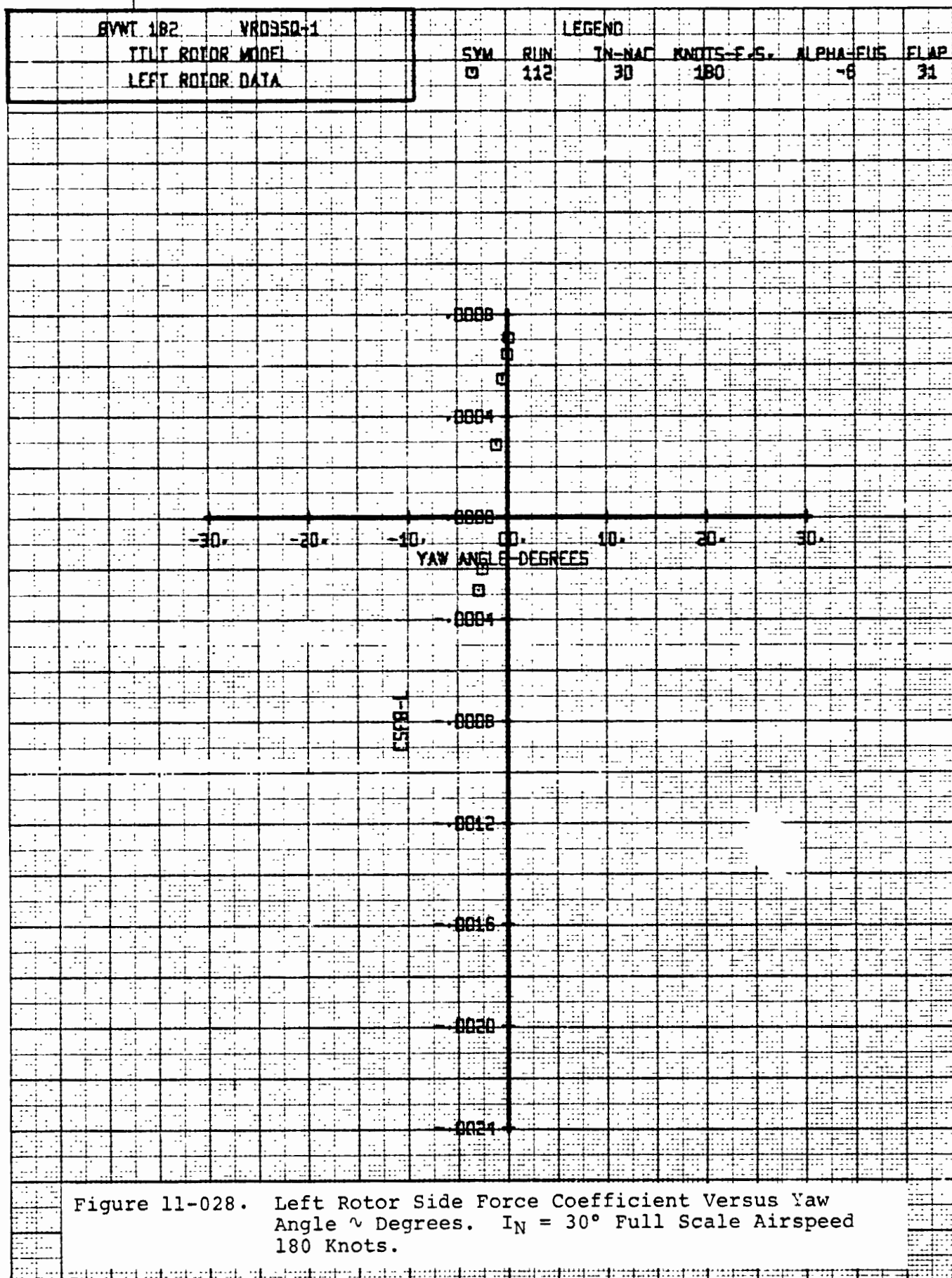


| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | VR0950-1 | LEGEND | | | | |
| YTUT ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FUS |
| LEFT ROTOR DATA | | □ | 112 | 30 | 180 | -6 |
| | | | | | | FLAP 31 |

Figure 11-026. Left Rotor Power Coefficient Versus Yaw Angle γ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.







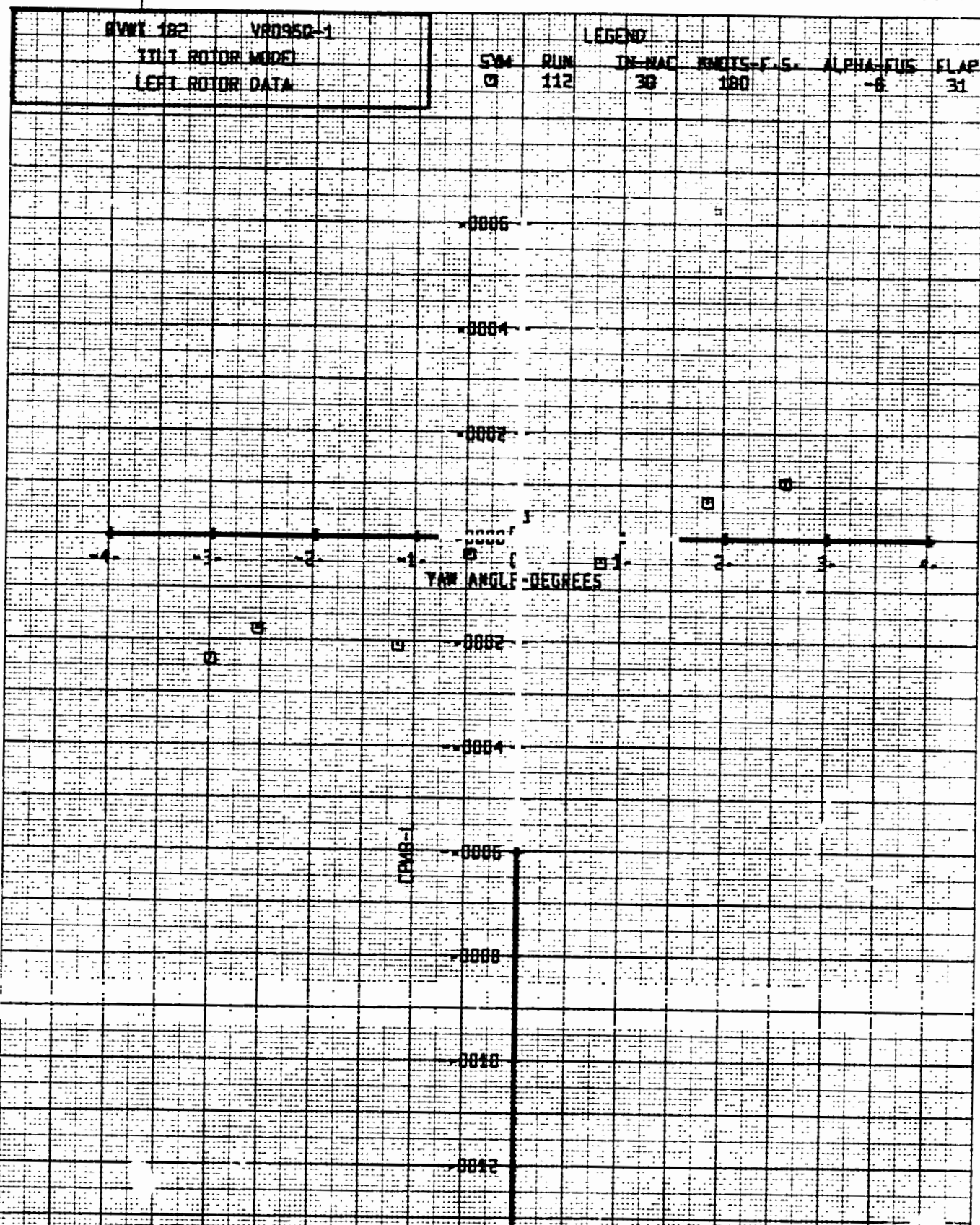
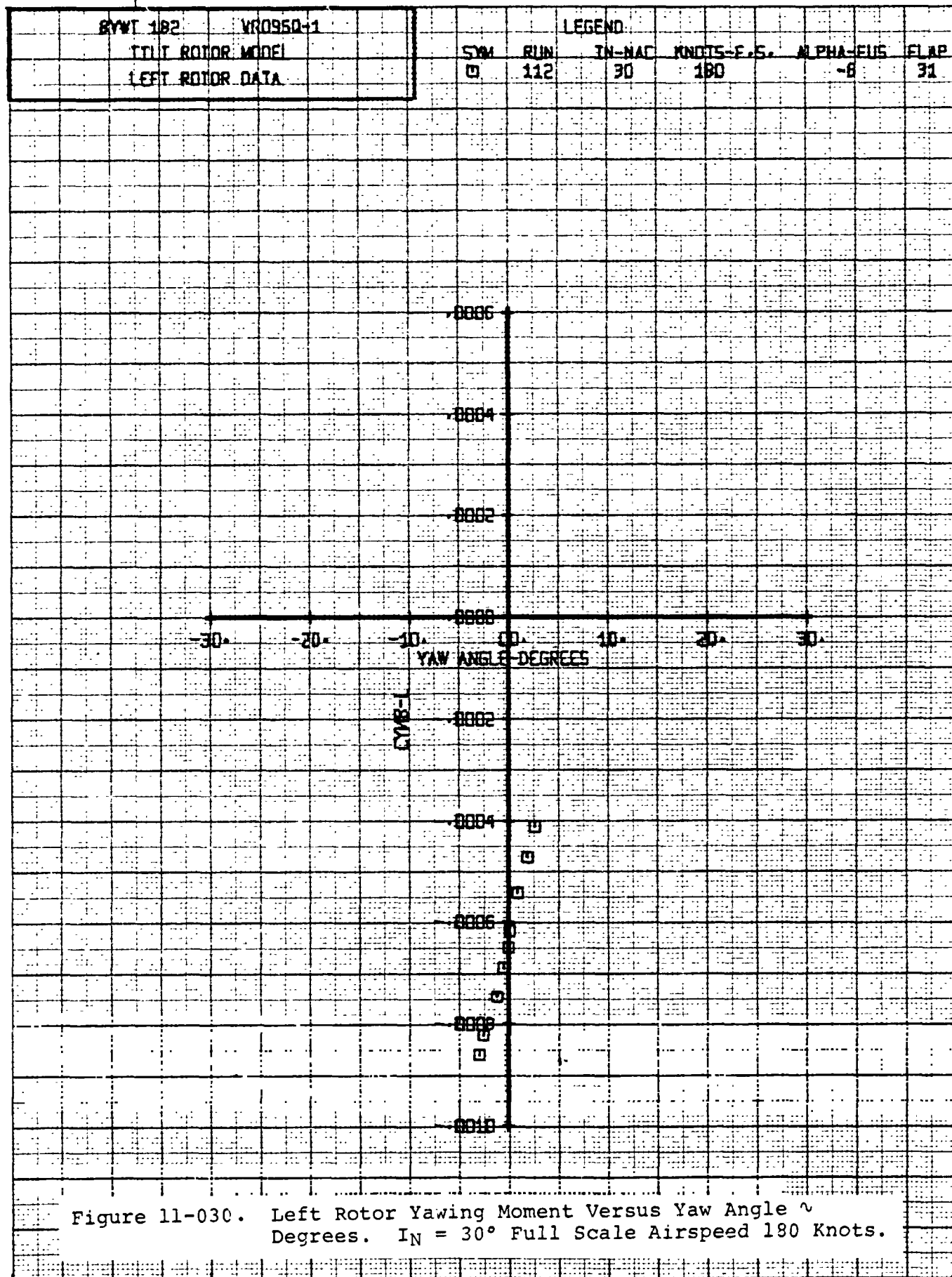
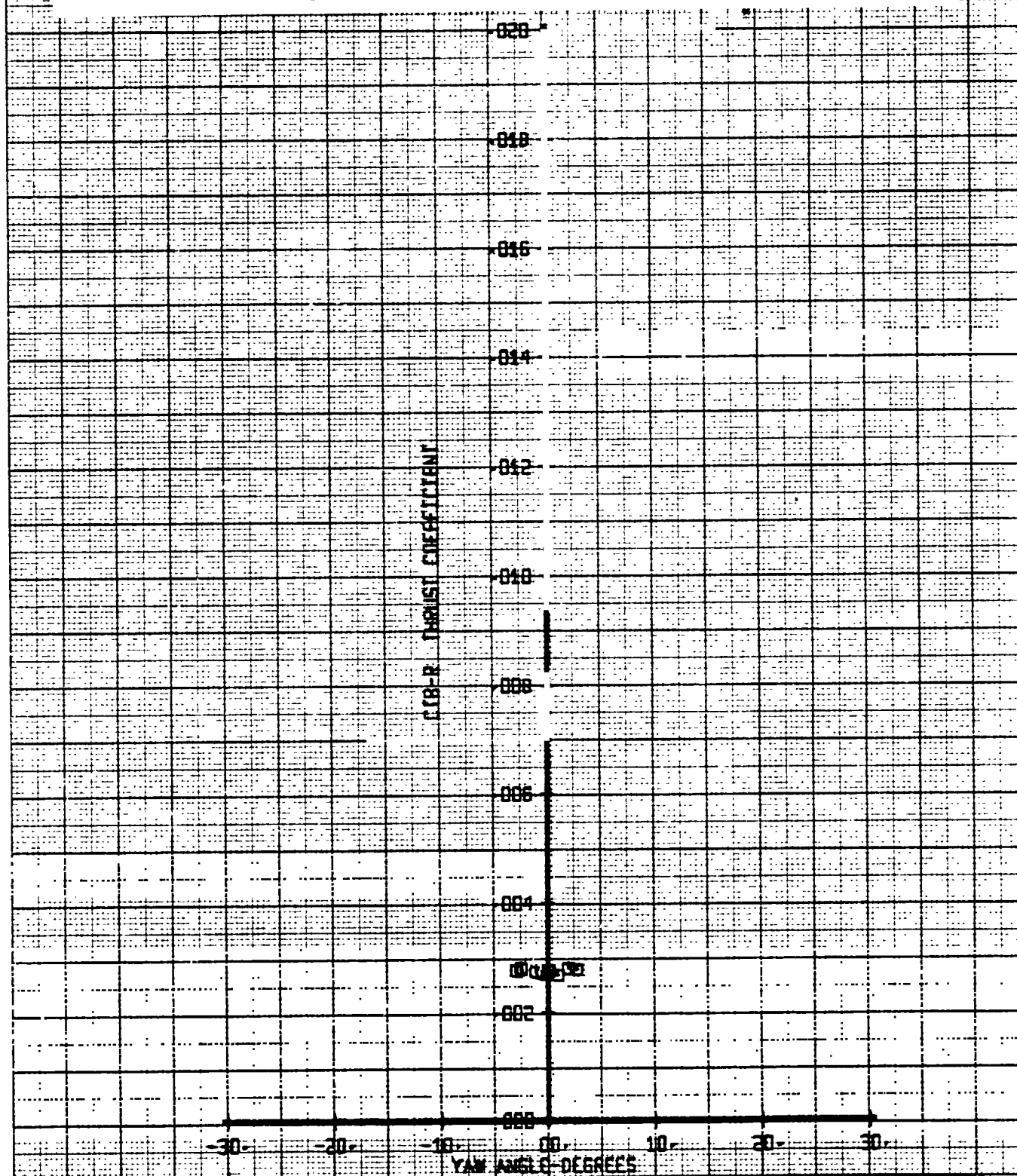


Figure 11-029. Left Rotor Pitching Moment Versus Yaw Angle α Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.



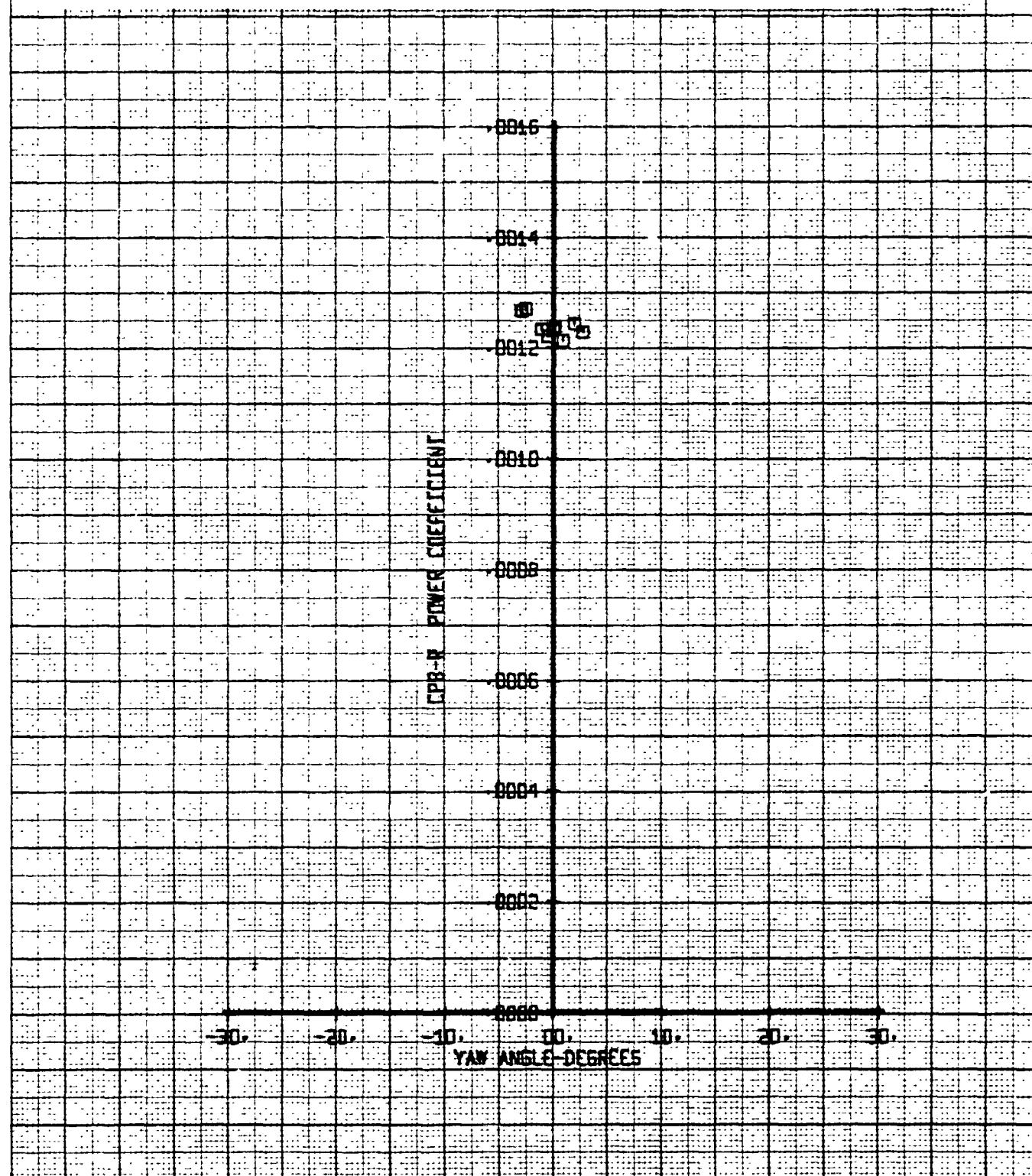
| | | | | | | | |
|------------------|----------|-----|-----|--------|------------|-----------|------|
| BVWT 182 | VR0950-1 | SYN | RUN | IN-MAC | KNOTS-E.S. | ALPHA-FLG | FLAP |
| LEFT ROTOR MODEL | | 0 | 112 | 30 | 180 | -6 | 31 |
| RIGHT ROTOR DATA | | | | | | | |

Figure 11-031. Right Rotor Thrust Coefficient Versus Yaw Angle α Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.



| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | VR0950-1 | LEGEND | | | | |
| TIPT ROTOR MODEL | | SYM | RUN | IN-MAG | KNOTS-F.S. | ALPHA-DEG |
| RIGHT ROTOR DATA | | 0 | 112 | 30 | 180 | -6 |
| | | | | | | 31 |

Figure 11-032. Right Rotor Power Coefficient Versus Yaw Angle γ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.



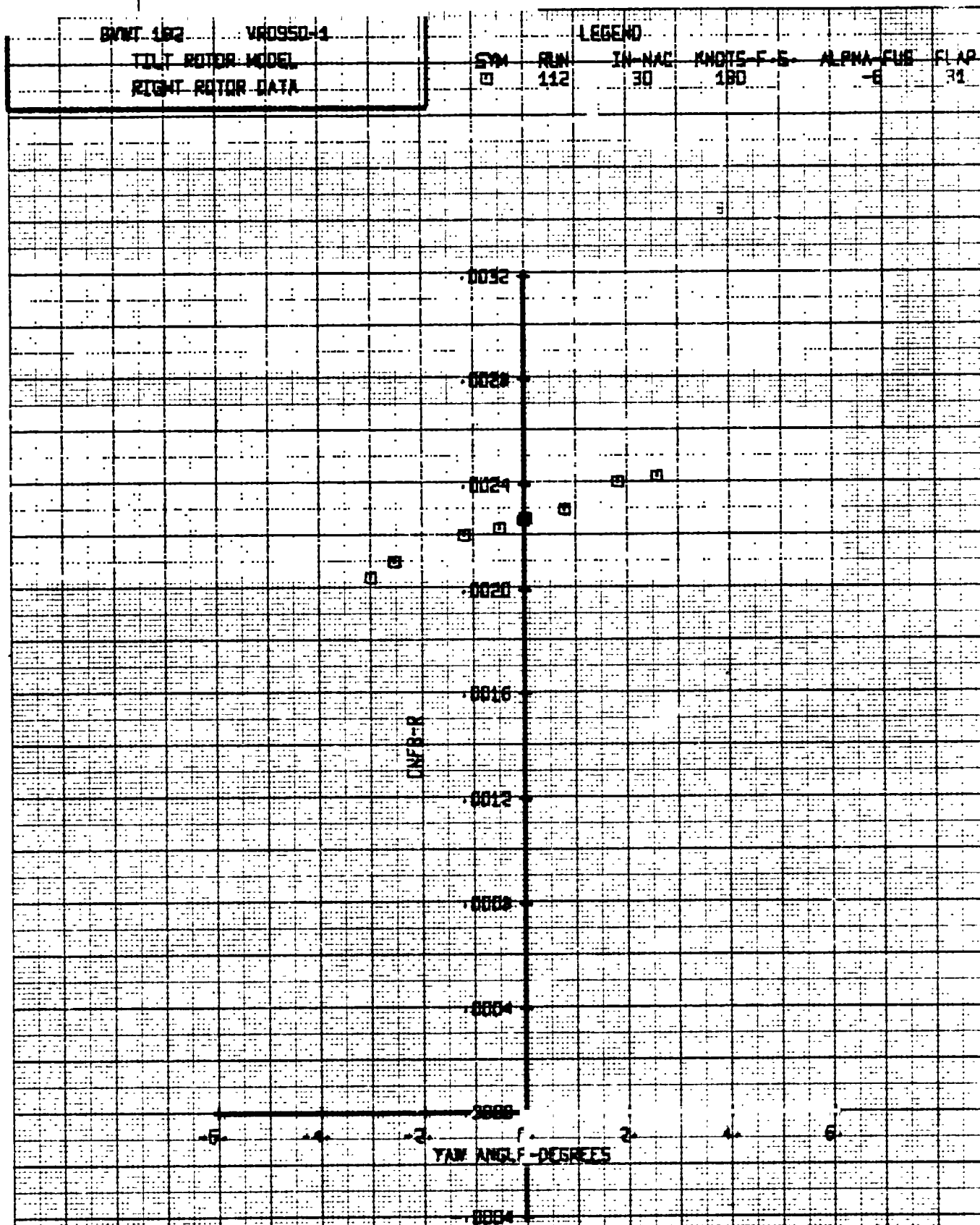


Figure 11-033. Right Rotor Normal Force Coefficient Versus Yaw Angle ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.

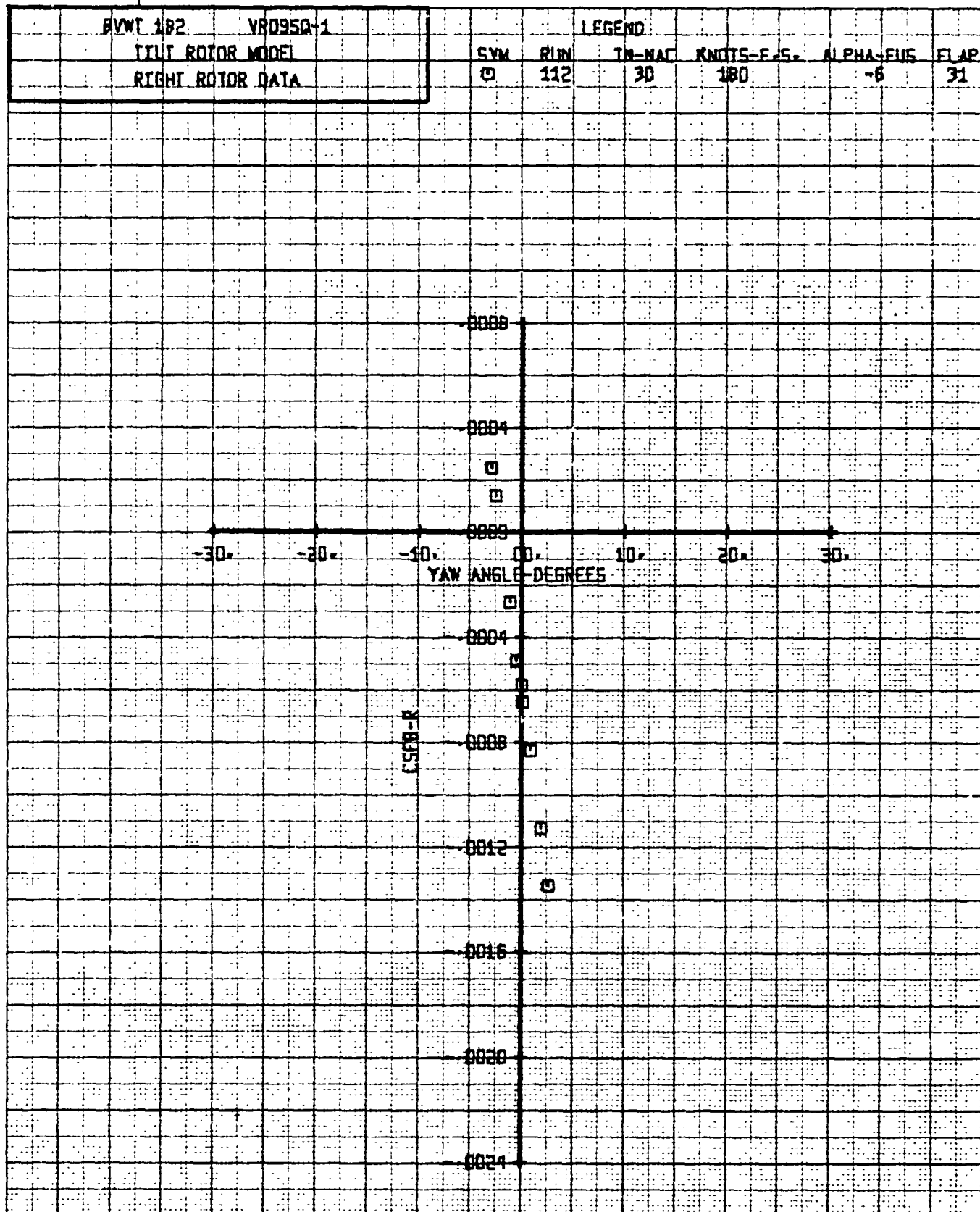
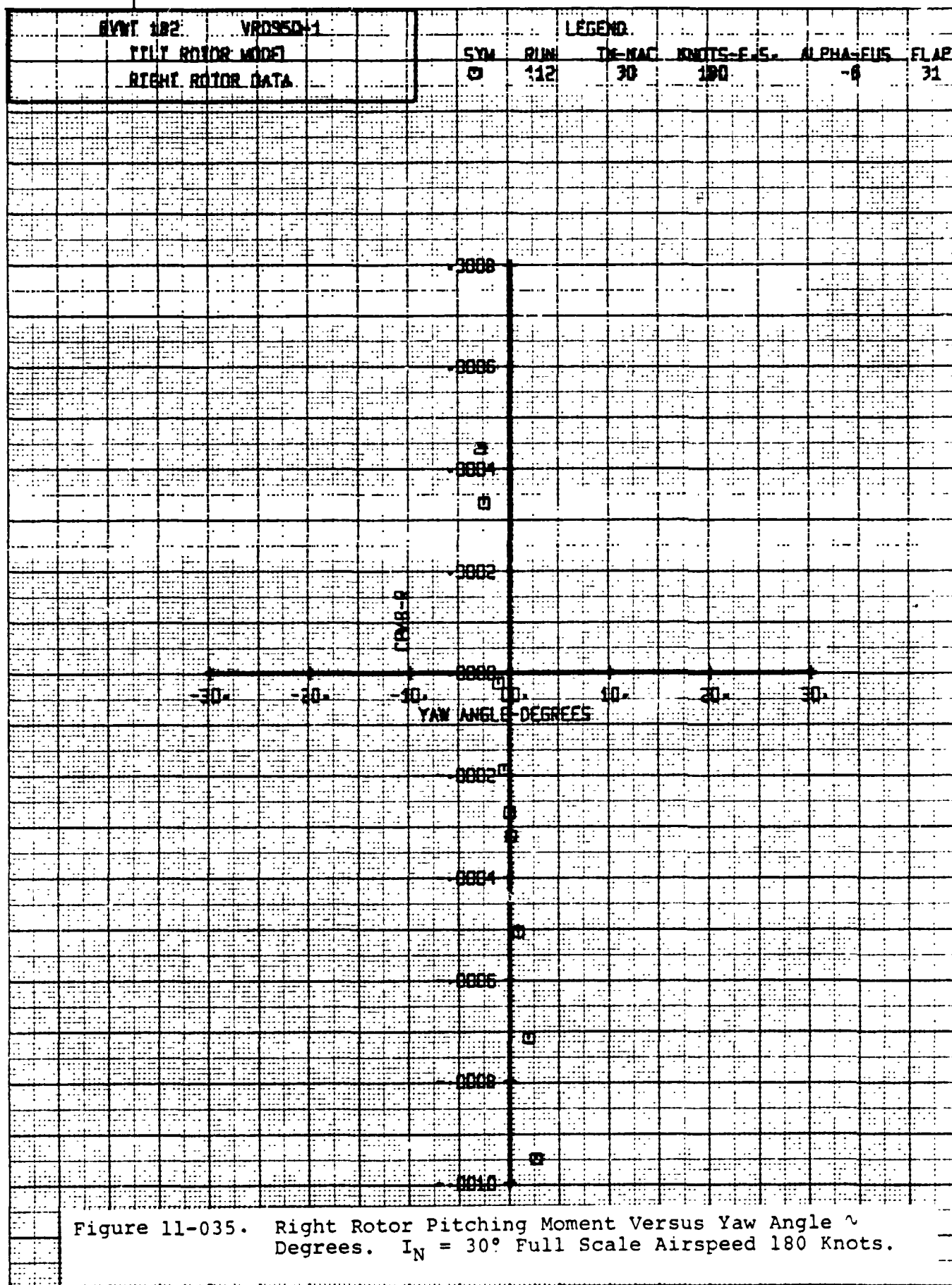
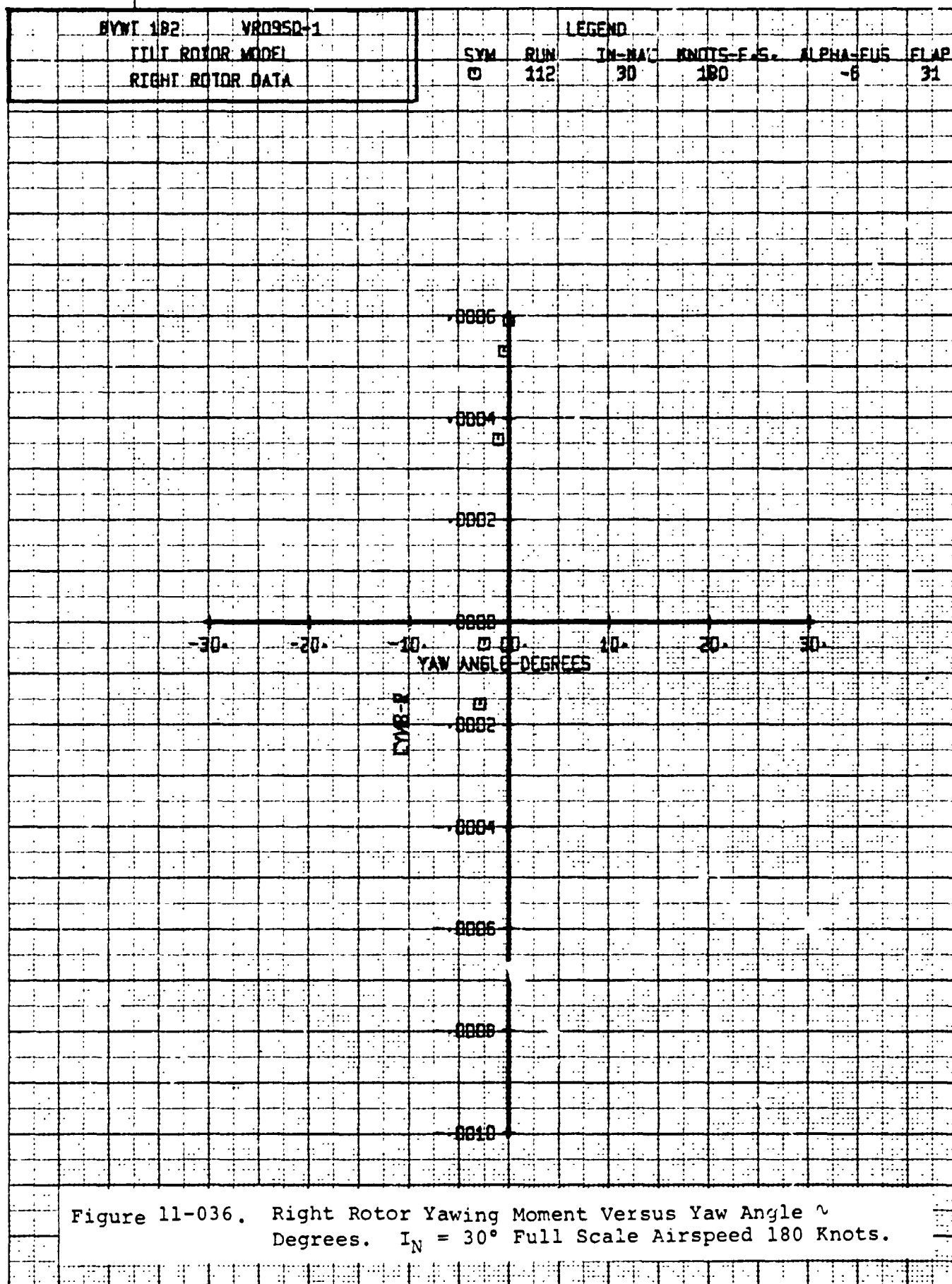


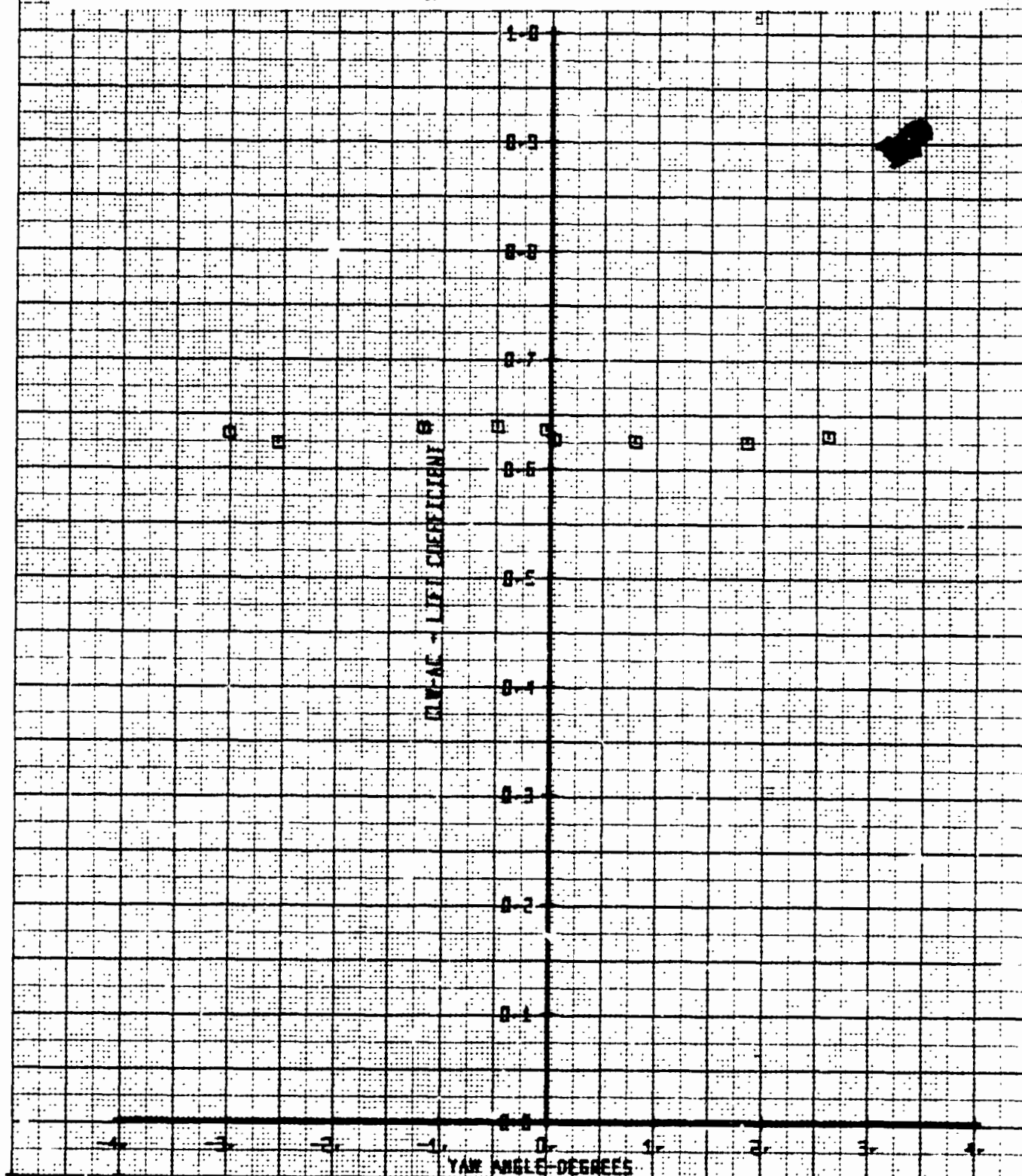
Figure 11-034. Right Rotor Side Force Coefficient Versus Yaw Angle ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.

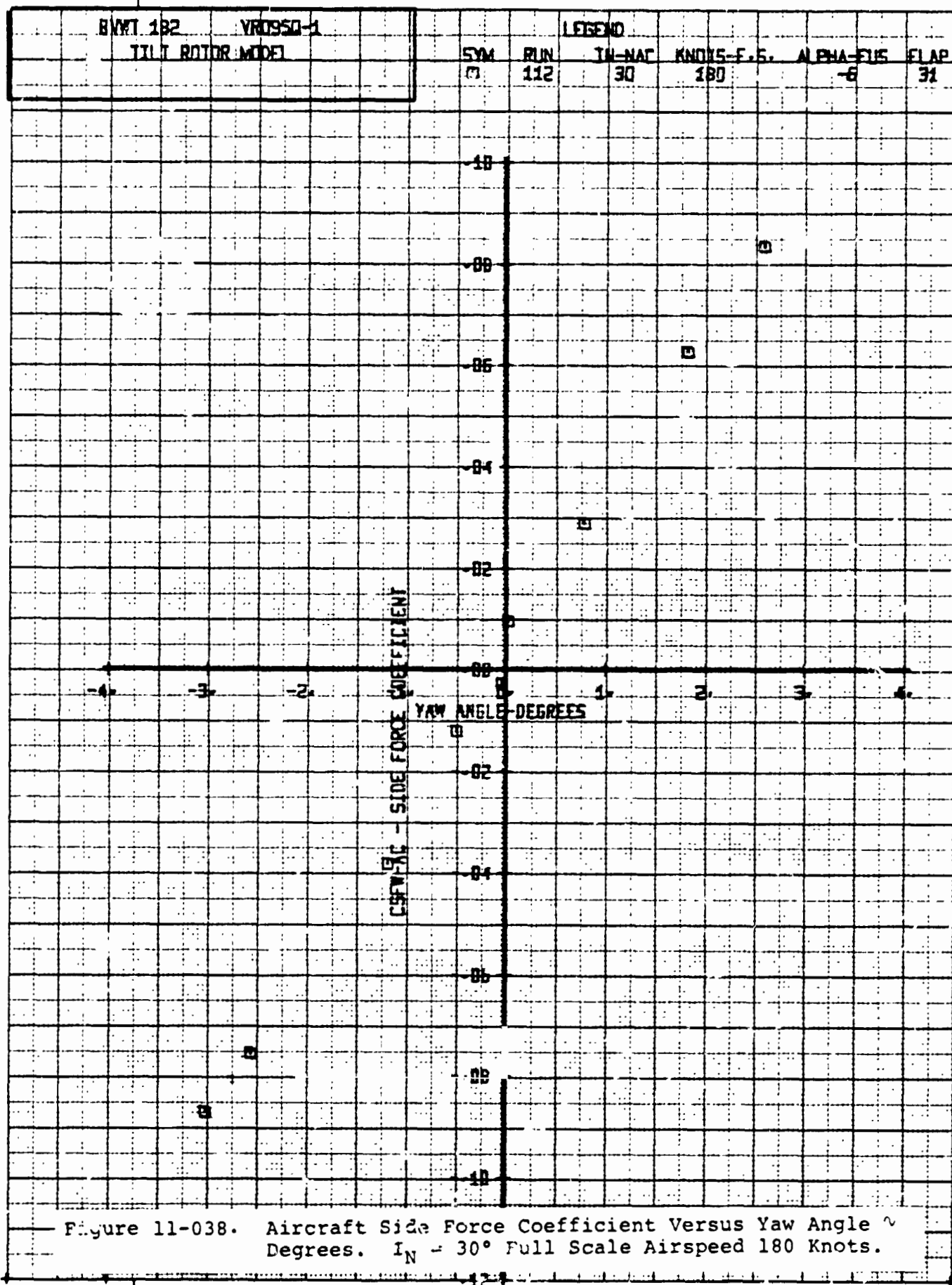


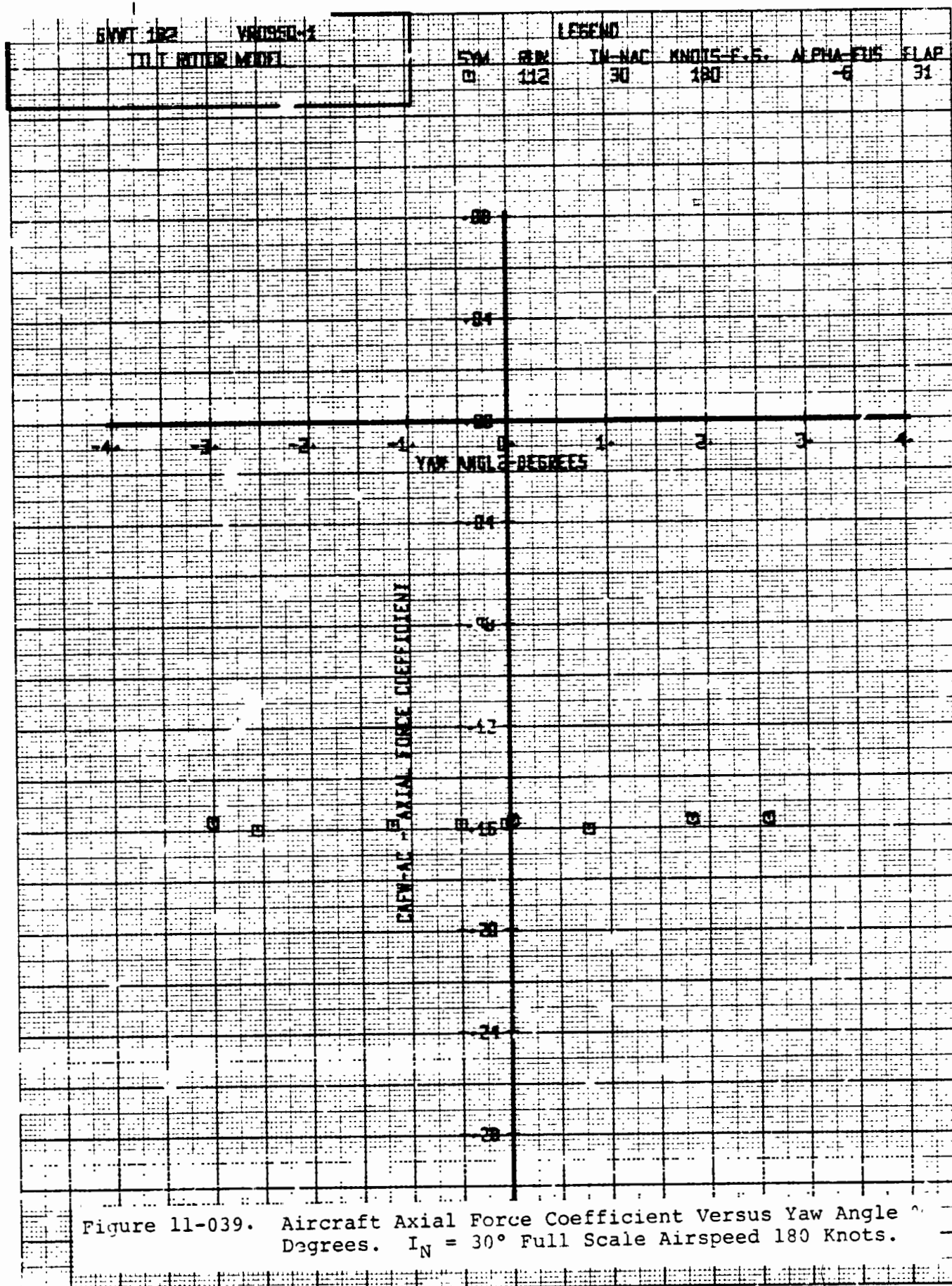


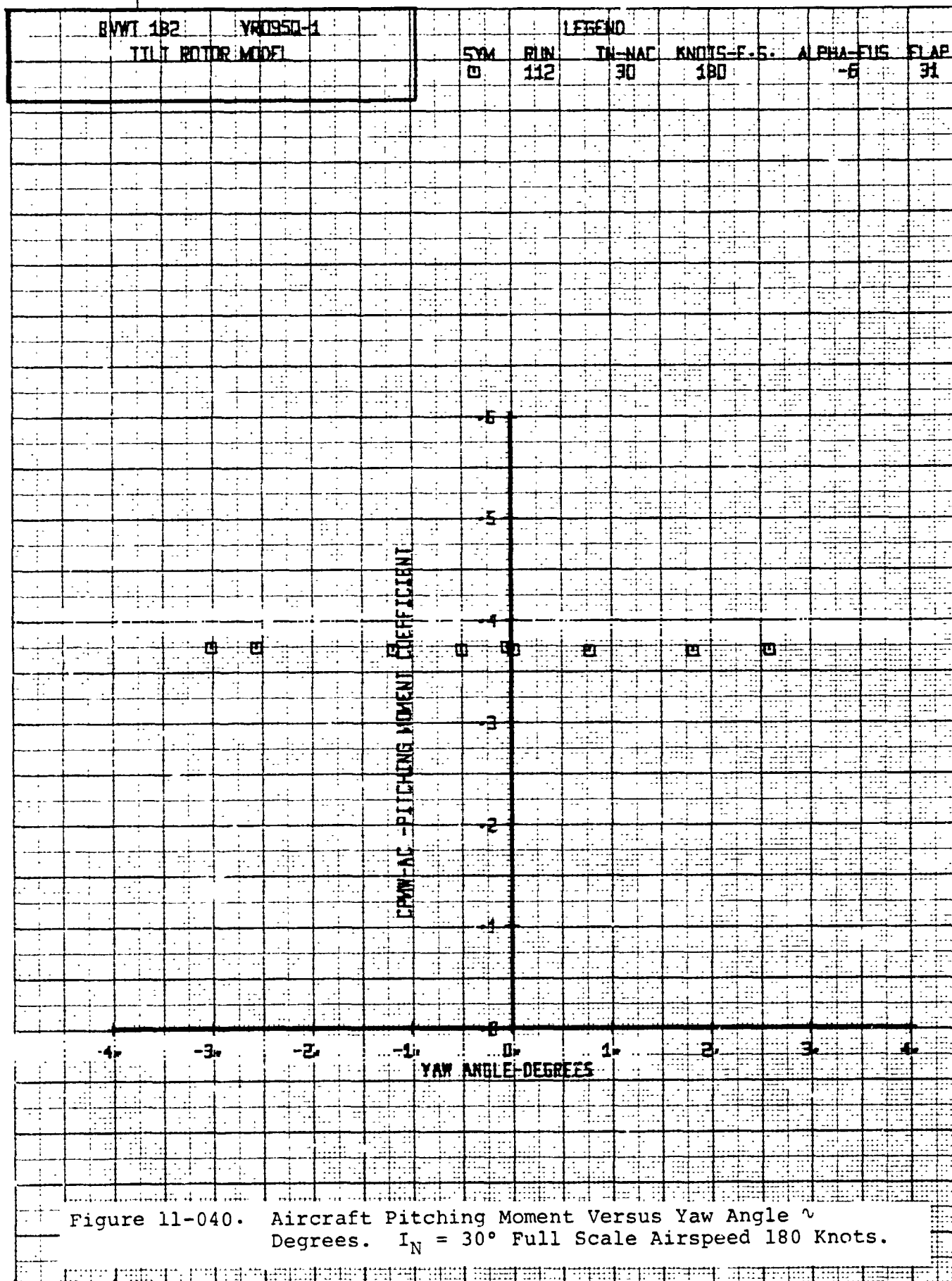
| | | | | | | | | | |
|------------------|--|----------|--|--------|-----|--------|------------|-----------|------|
| RWNT 102 | | VR0950-1 | | LEGEND | | | | | |
| TILT ROTOR MODEL | | | | SYM | RUN | IN-NAC | KNOTS-E.S. | ALPHA-FUS | FLAP |
| | | | | □ | 112 | 30 | 100 | -6 | 31 |

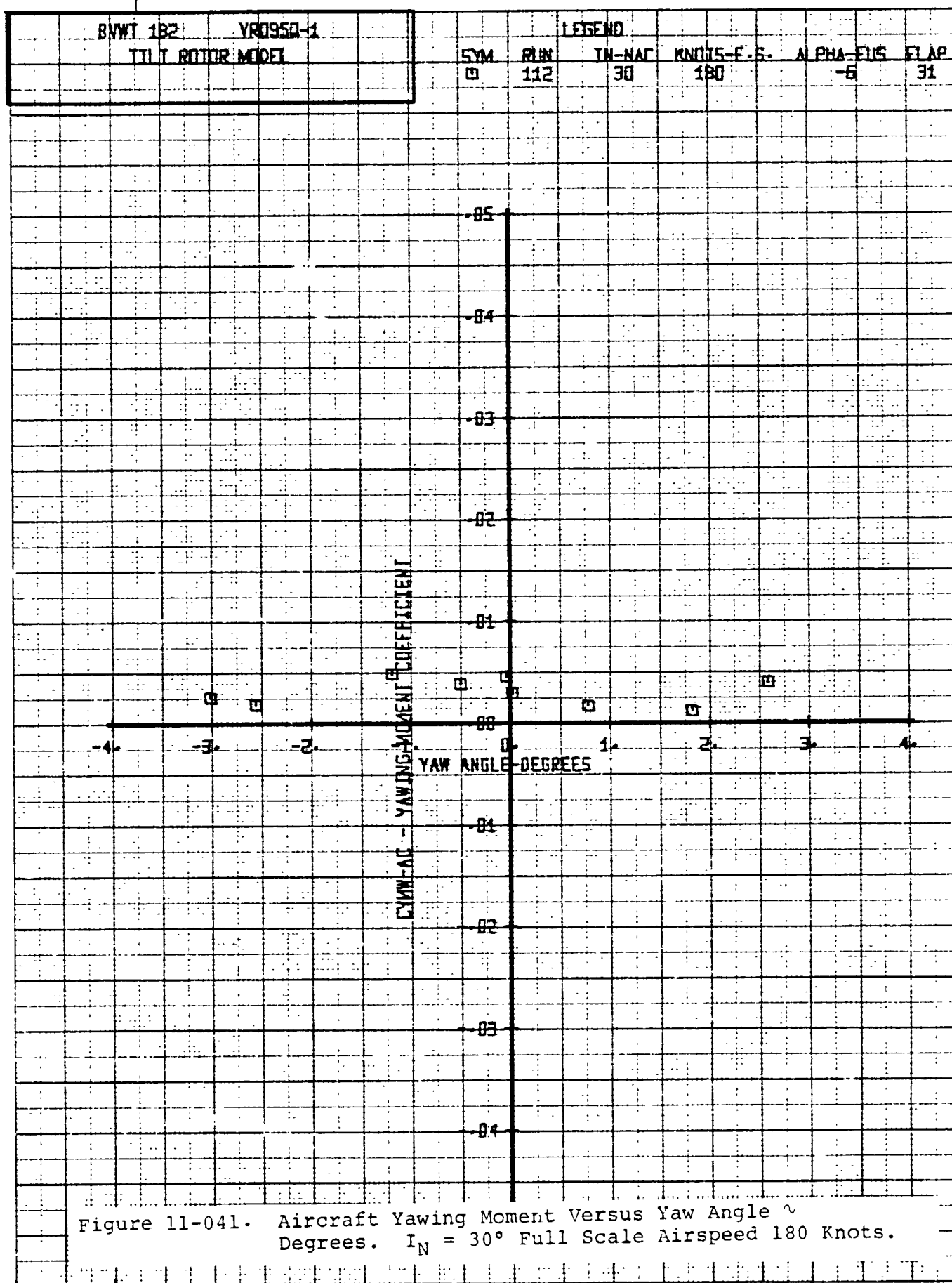
Figure 11-037. Aircraft Lift Coefficient Versus Yaw Angle ~
Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.

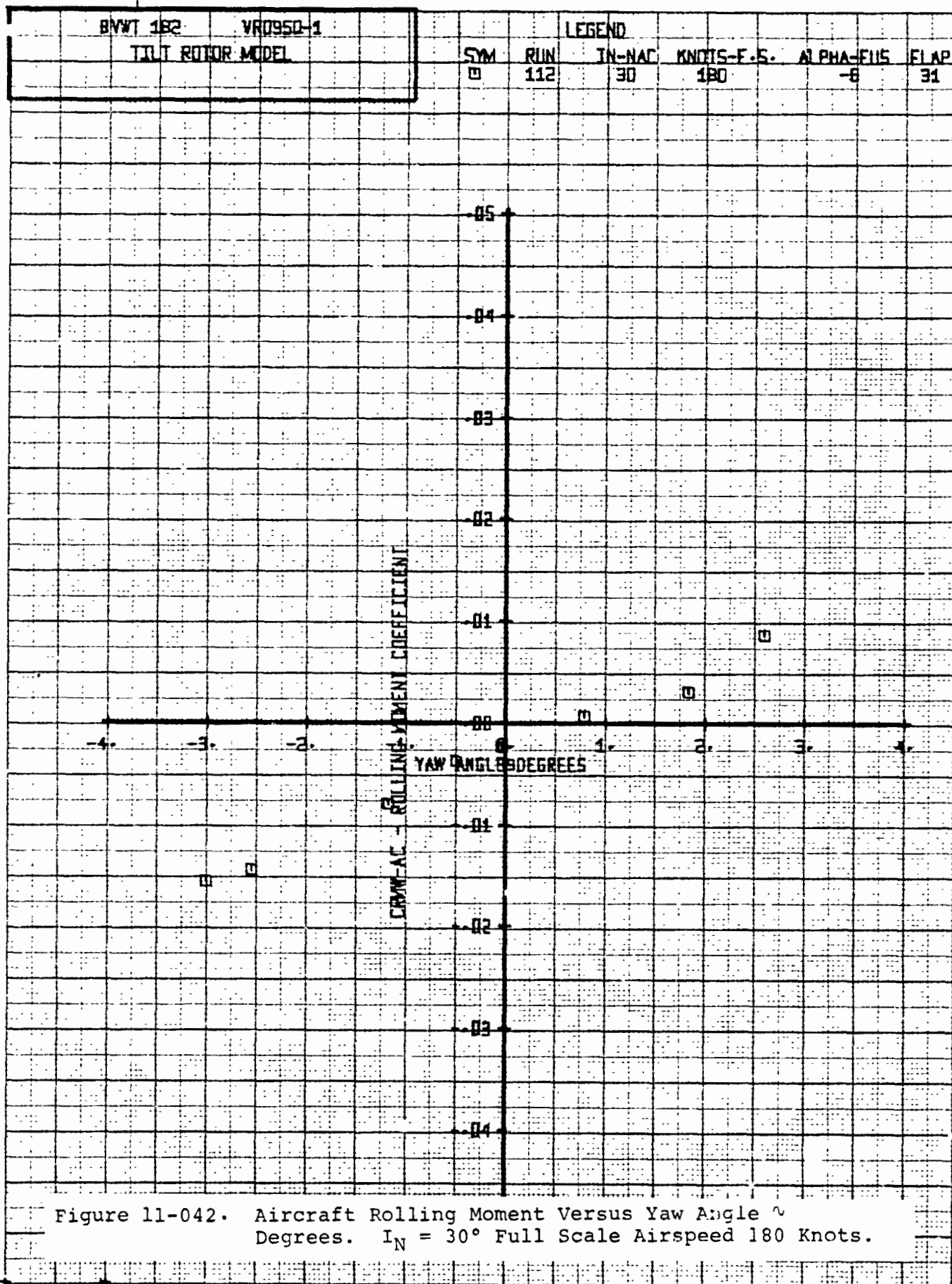












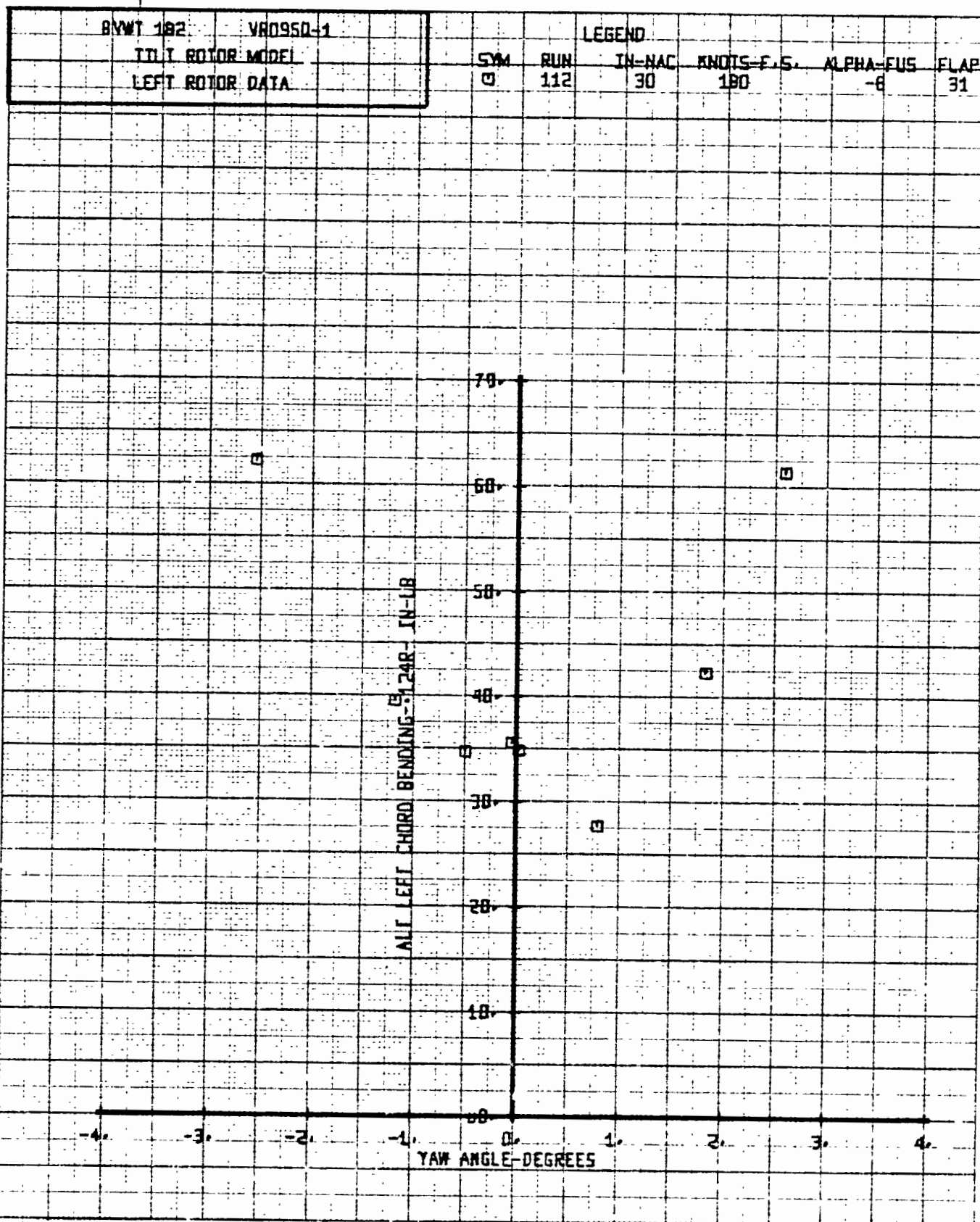
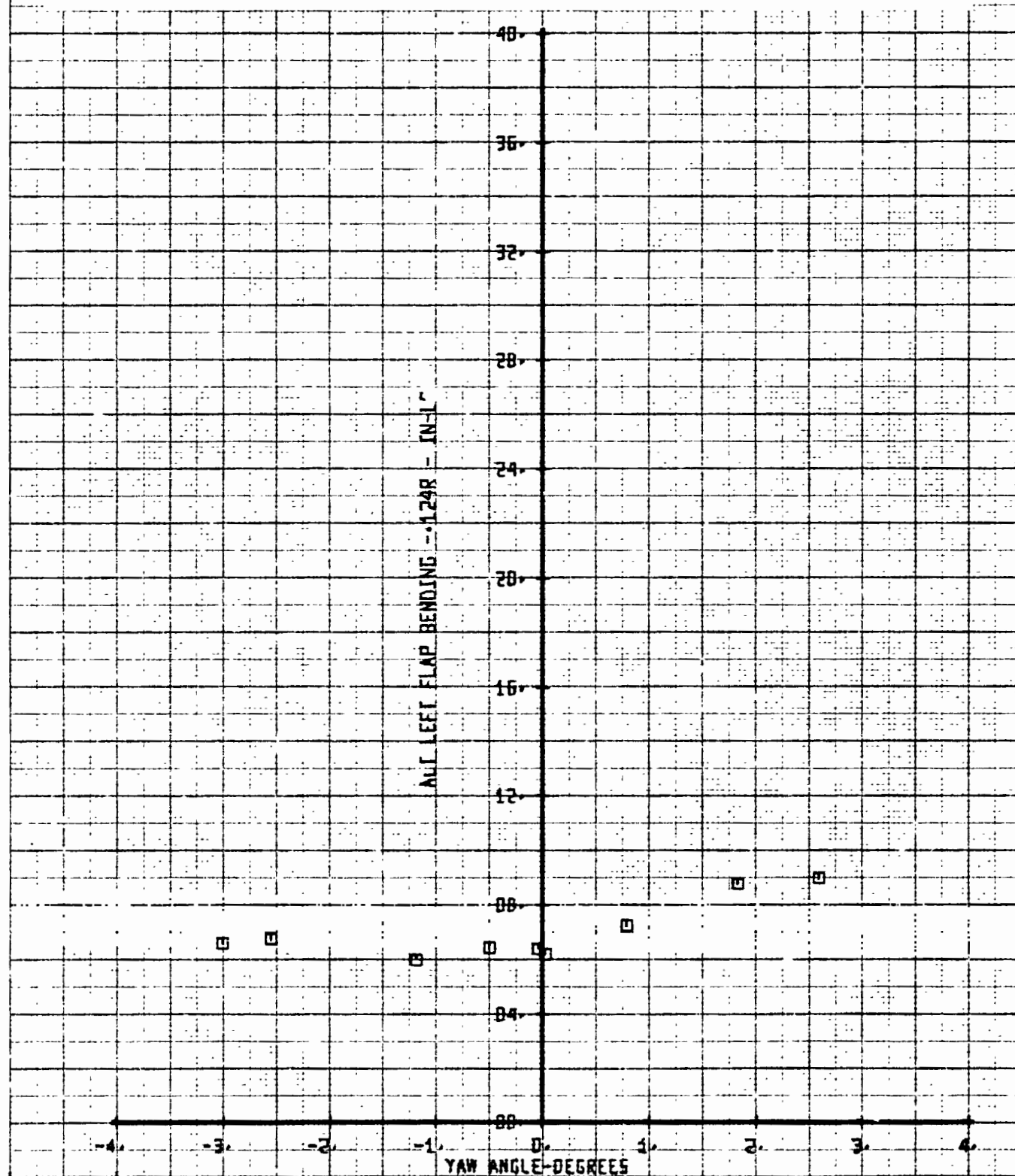


Figure 11-043. Alt. Left Chord Bending Versus Yaw Angle ~
Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.

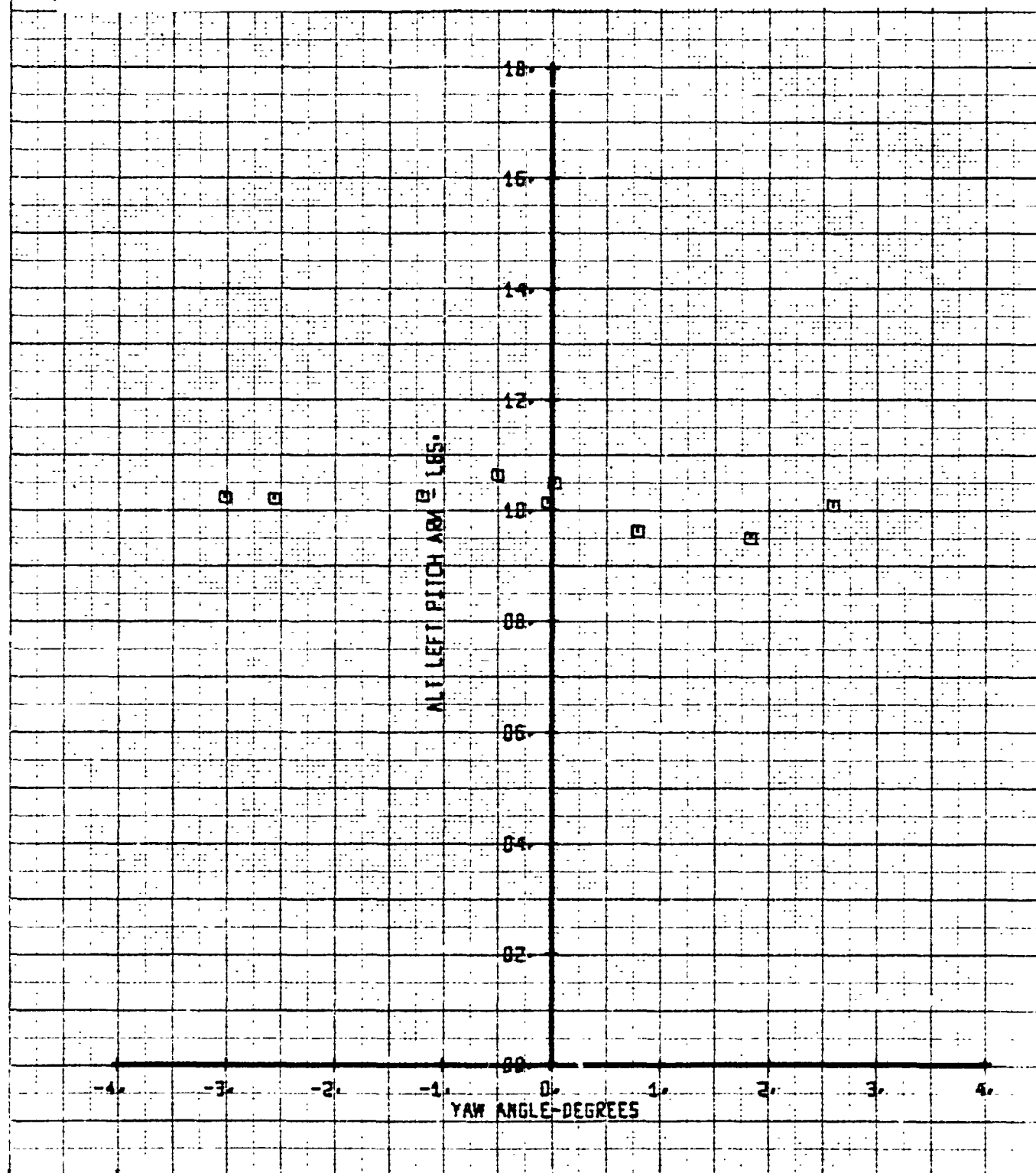
| | | | | | | |
|-------------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | VR0950-1 | LEGEND | | | | |
| TIT I ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FUS |
| LEFT ROTOR DATA | | 0 | 112 | 30 | 180 | -6 |
| | | | | | | 31 |

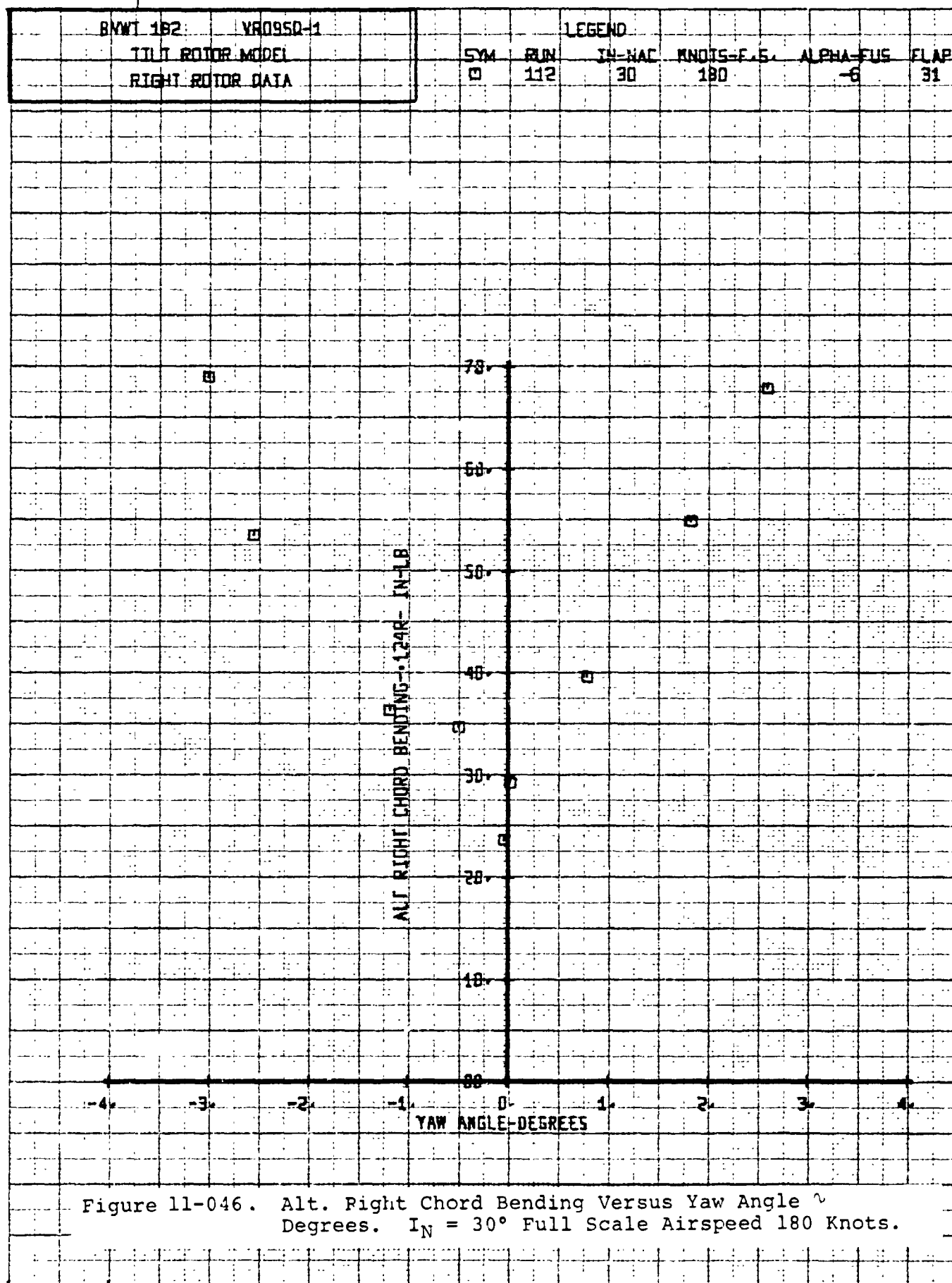
Figure 11-044. Alt. Left Flap Bending Versus Yaw Angle γ
Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.



| | | | | | |
|------------------|----------|--------|-----|--------|------------|
| BVWT 182 | VR0950-1 | LEGEND | | | |
| TILT ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-F.S. |
| LEFT ROTOR DATA | | □ | 112 | 30 | 180 |
| | | | | | ALPHA-FUS |
| | | | | | -8 |
| | | | | | FLAP |
| | | | | | 31 |

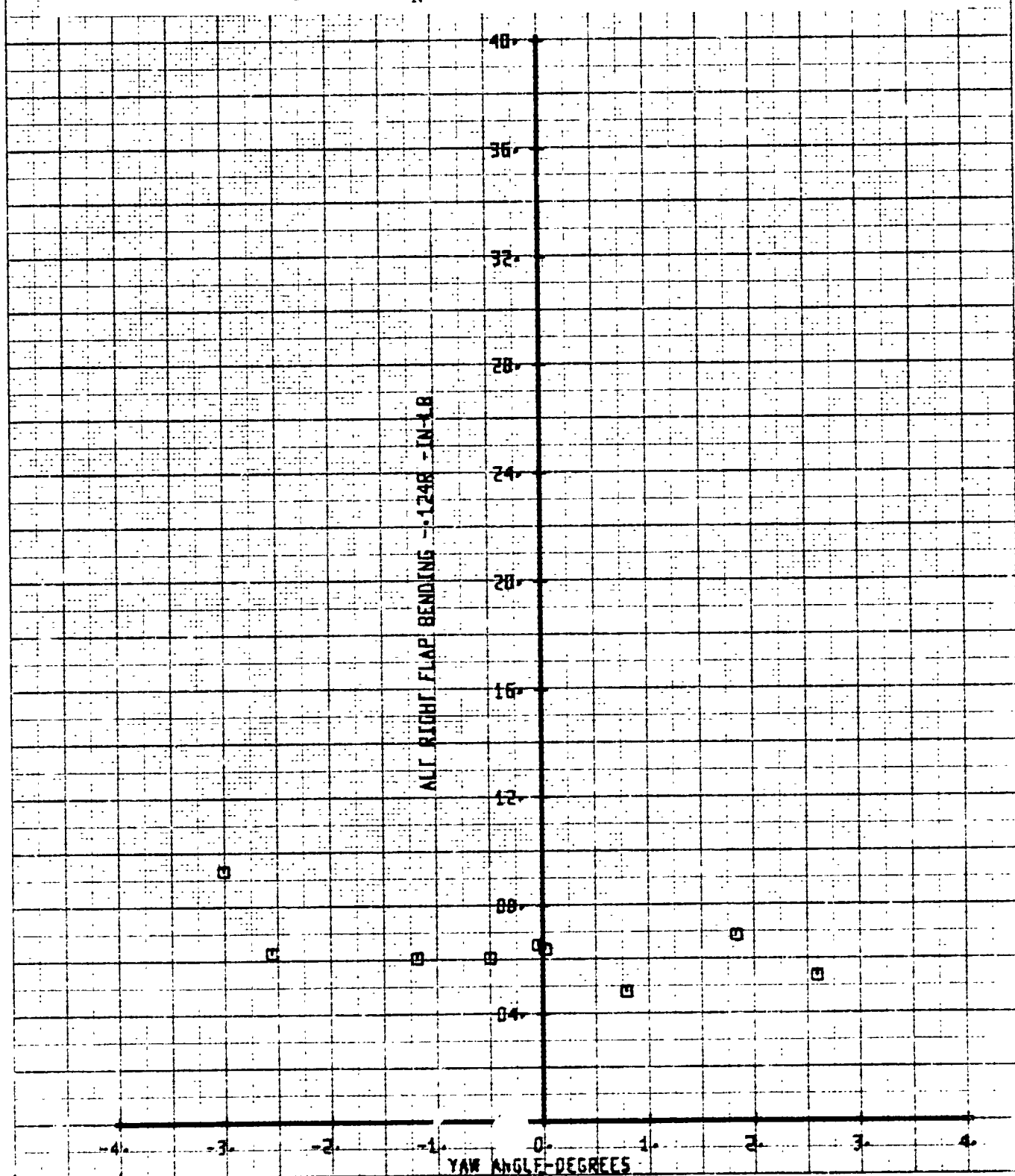
Figure 11-045. Alt. Left Pitch Link Load Versus Yaw Angle ~
Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.





| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | VR095D-1 | LEGEND | | | | |
| TILT ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FUS |
| RIGHT ROTOR DATA | | 0 | 112 | 30 | 180 | -6 |
| | | | | | | FLAP 31 |

Figure 11-047. Alt. Right Flap Bending Versus Yaw Angle ~
Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.



BVWT 182 VR0950-1

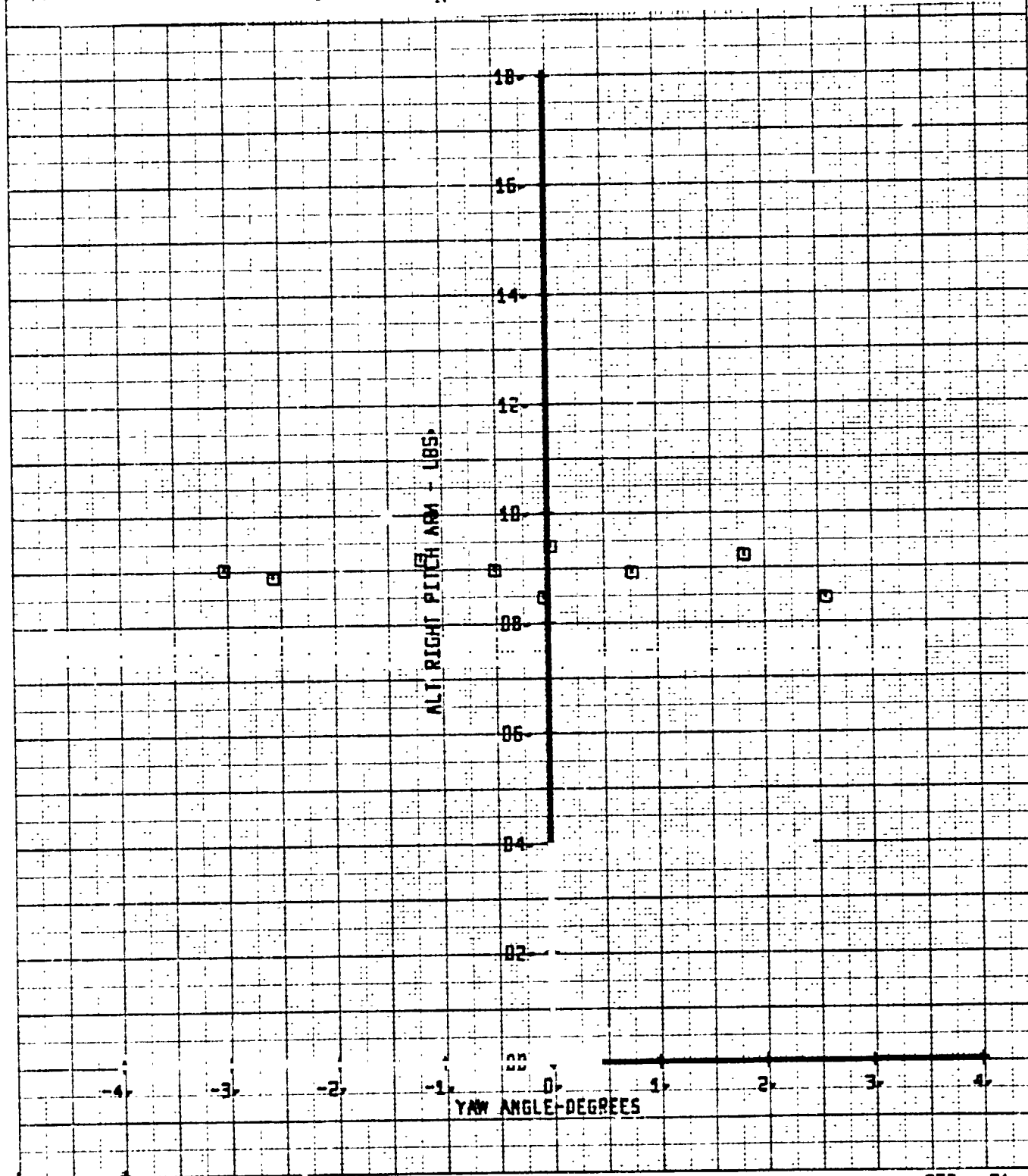
TILT ROTOR MODEL

RIGHT ROTOR DATA

LEGEND

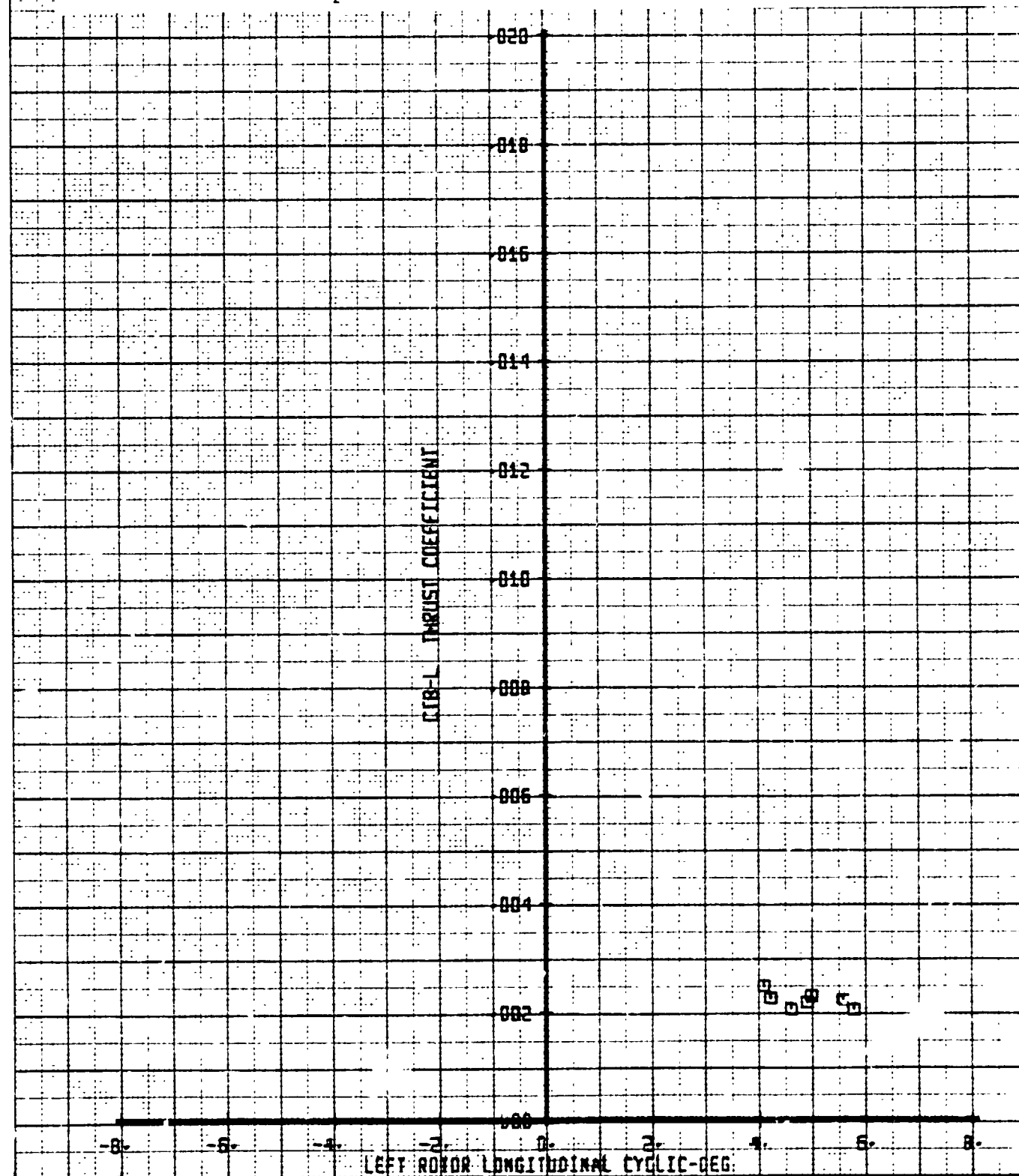
| SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-DEG | FLAP |
|-----|-----|--------|------------|-----------|------|
| □ | 112 | 30 | 180 | -6 | 31 |

Figure 11-048. Alt. Right Pitch Link Load Versus Yaw Angle ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.



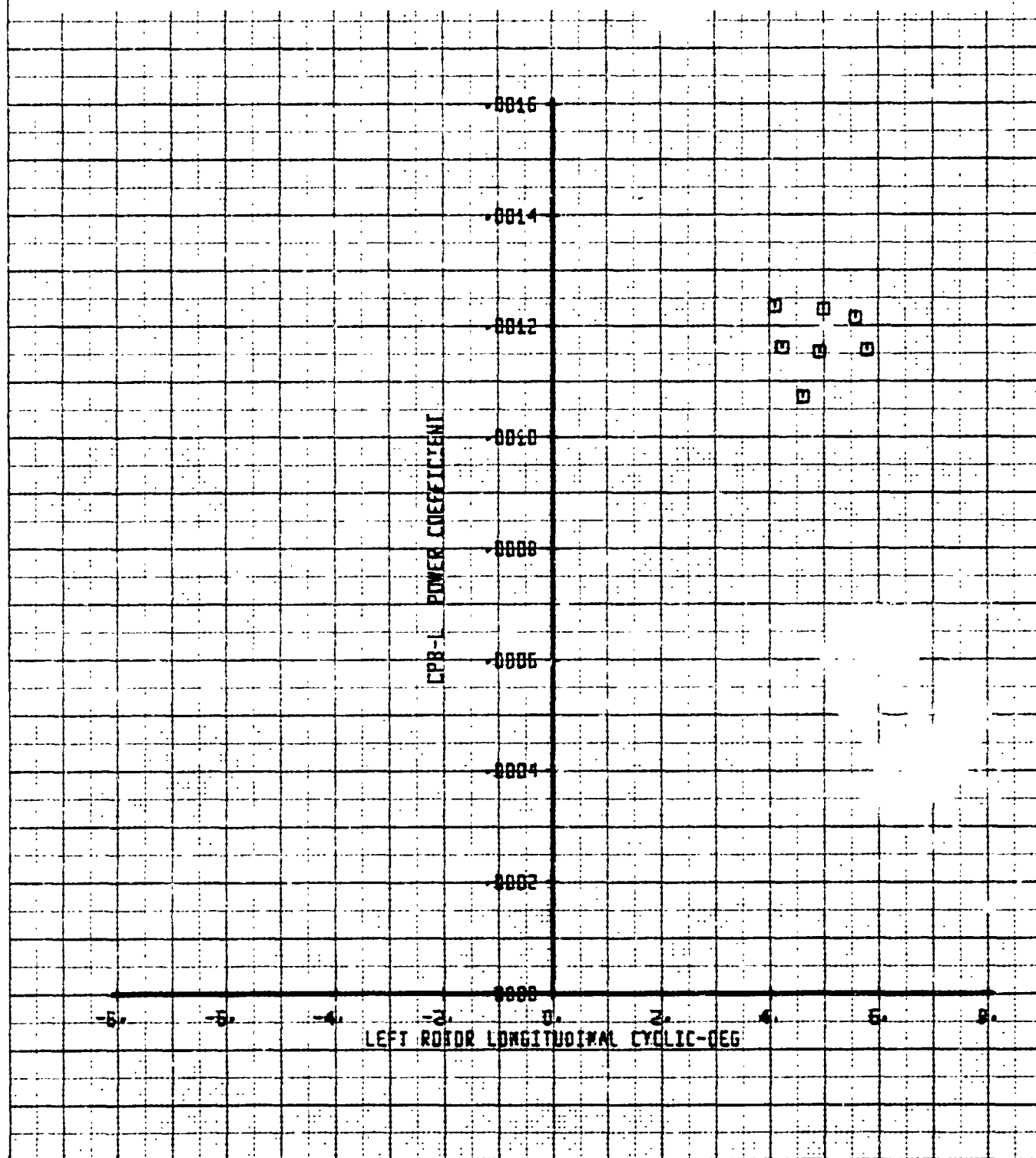
| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BYWT 182 | VR0950-1 | LEGEND | | | | |
| TILT ROTOR MODEL | | SWM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FUS |
| LEFT ROTOR DATA | | 0 | 114 | 30 | 180 | -6 |
| | | | | | | 31 |

Figure 11-049. Left Rotor Thrust Coefficient Versus Left Rotor Long. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale
Airspeed 180 Knots.



| | | | | | | |
|------------------|--|----------|--------|-----|--------|------------|
| BVWT 182 | | YR0950-1 | LEGEND | | | |
| TILT ROTOR MODEL | | | SYM | RUN | IN-NAC | KNOTS-F.S. |
| LEFT ROTOR DATA | | | □ | 114 | 30 | 180 |
| | | | | | | ALPHA-FUS |
| | | | | | | -6 |
| | | | | | | FLAP |
| | | | | | | 31 |

Figure 11-050. Left Rotor Power Coefficient Versus Left Rotor Long. Cyclic α Degrees. $I_N = 30^\circ$ Full Scale
Airspeed 180 Knots.



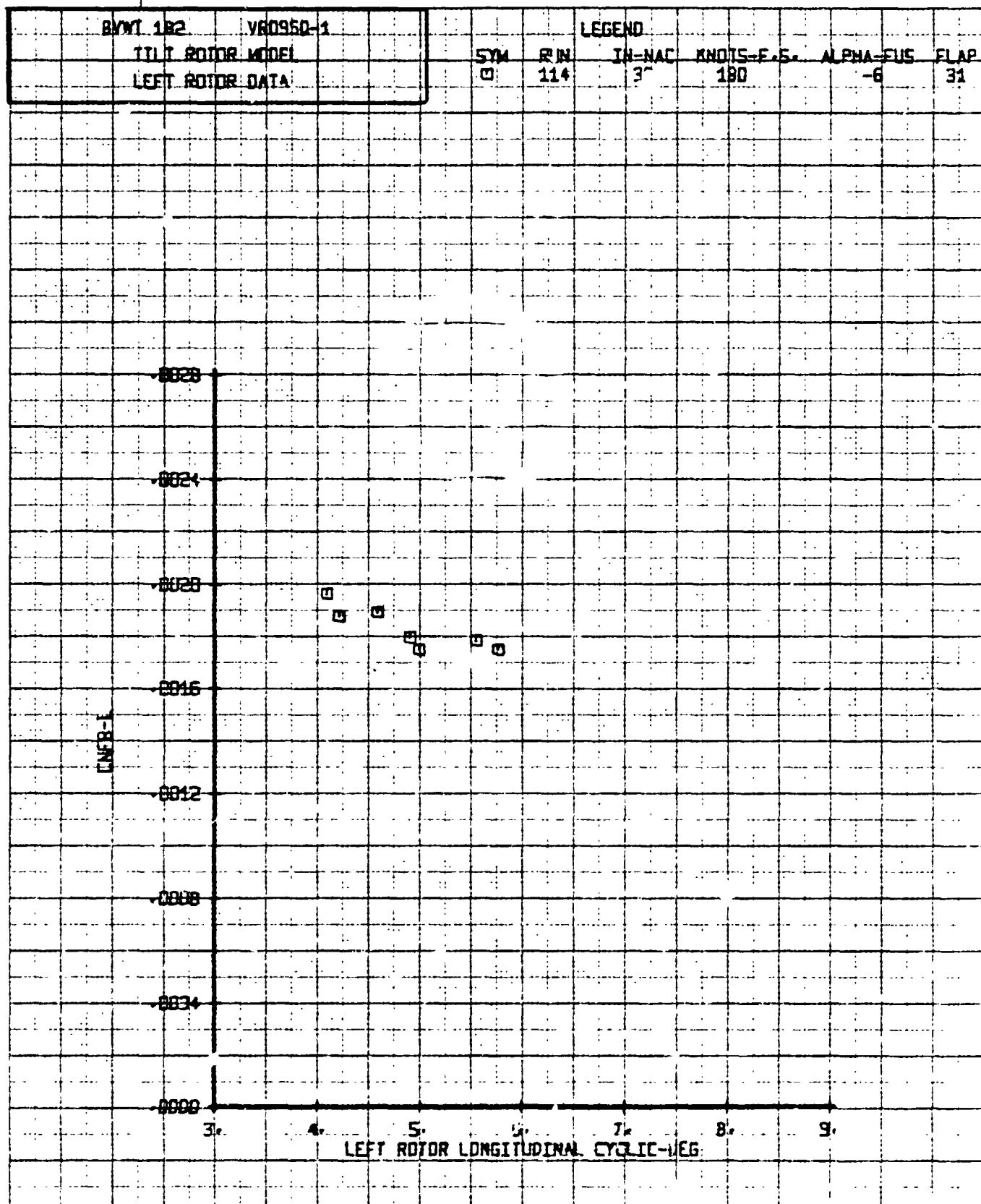


Figure 11-051. Left Rotor Normal Force Coefficient Versus Left Rotor Long. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.

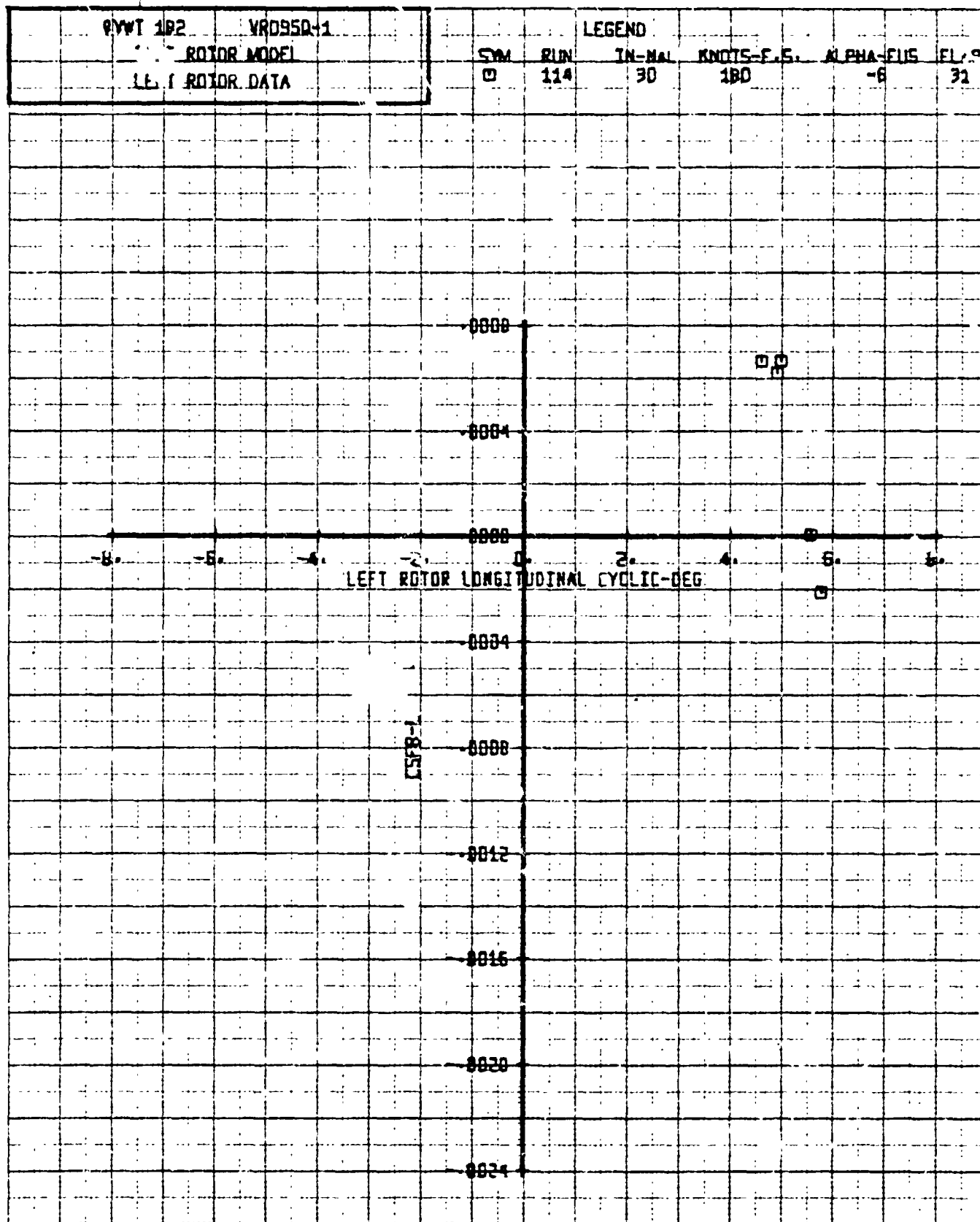
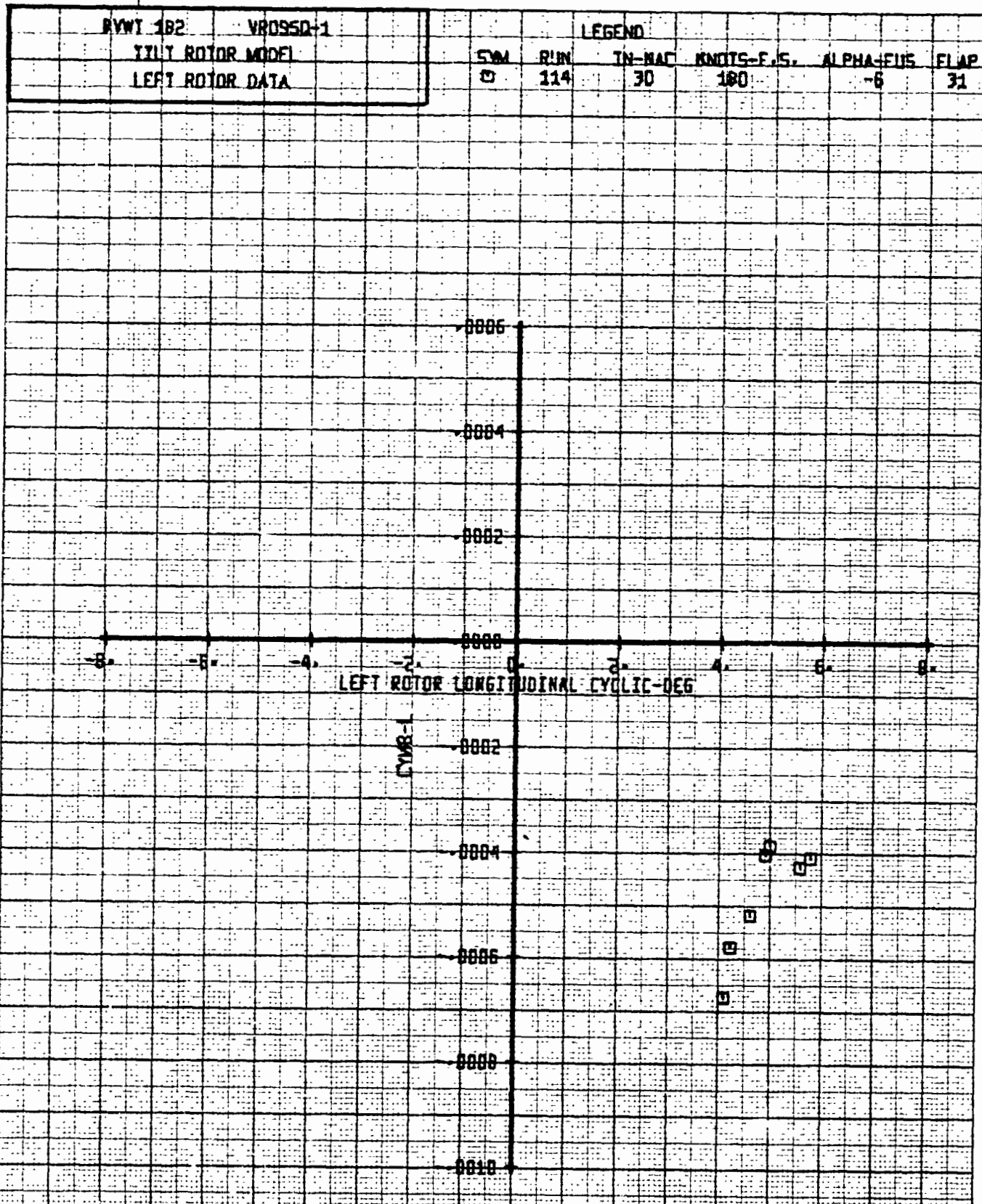


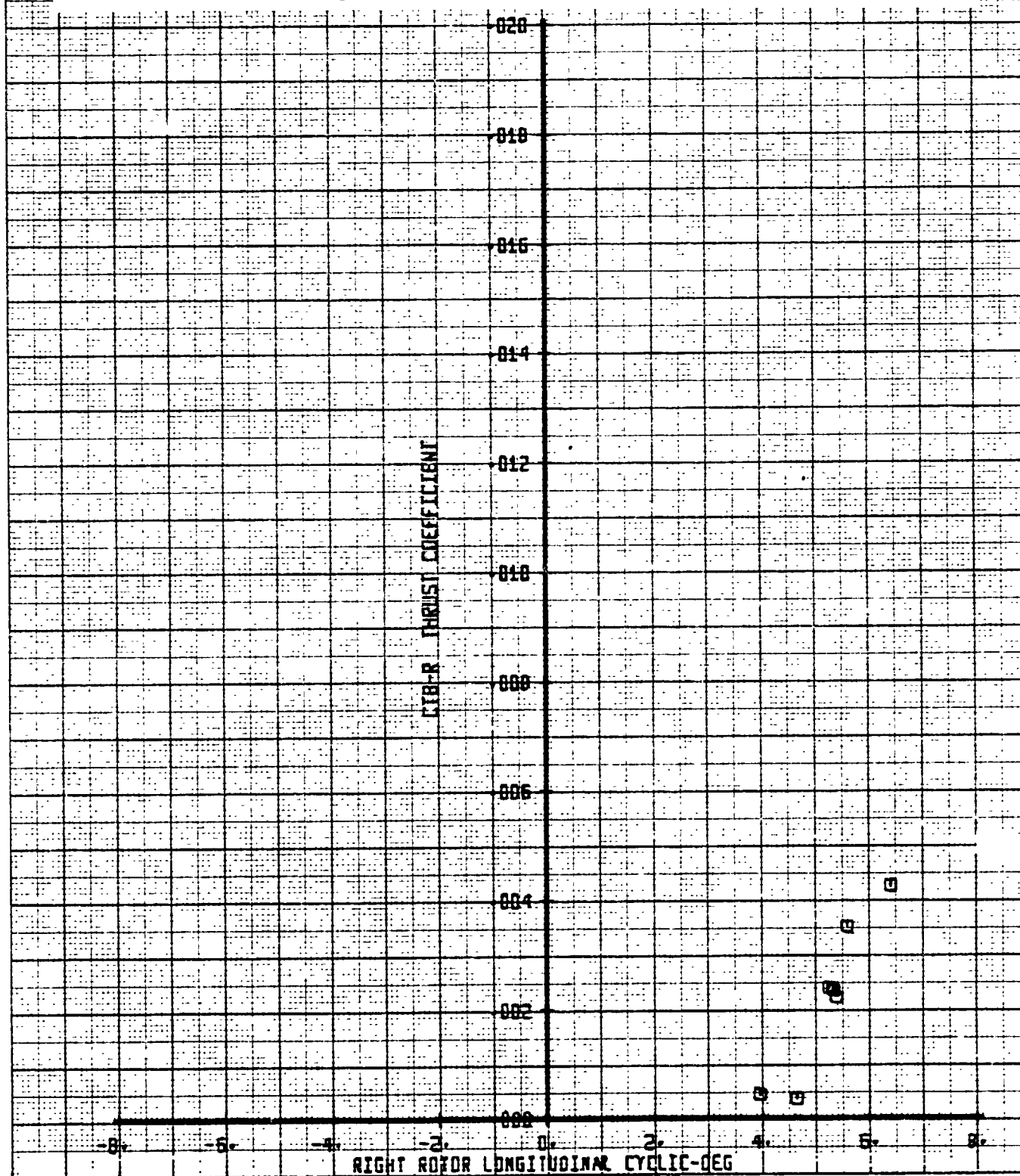
Figure 11-052. Left Rotor Side Force Coefficient Versus Left Rotor Long. Cyclic \sim Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.

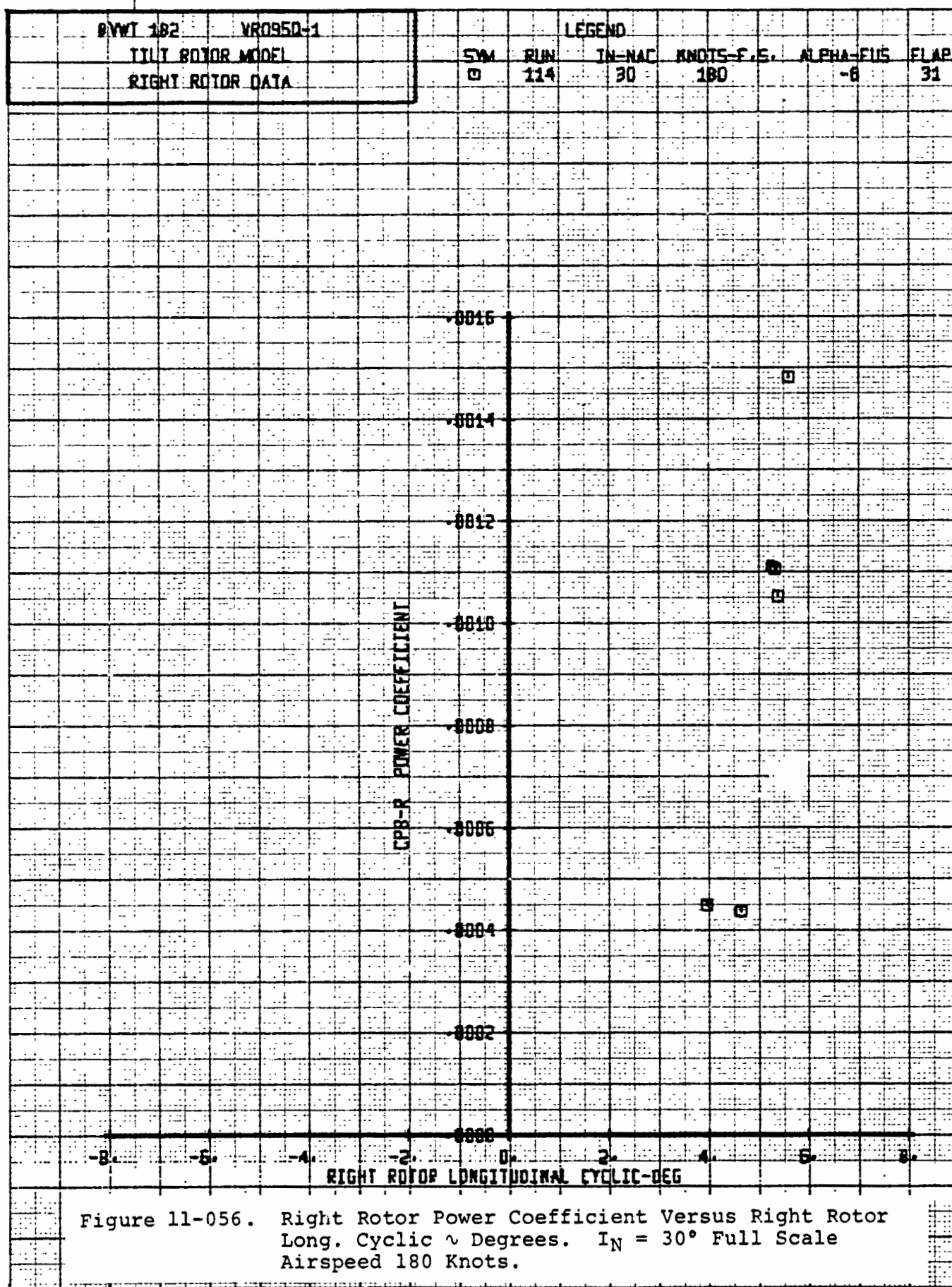
ET 73
W 182



| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| SVWT 182 | VR0950-1 | LEGEND | | | | |
| TILT ROTOR MODEL | | SWM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FUS |
| RIGHT ROTOR DATA | | 0 | 114 | 30 | 180 | -6 |
| | | | | | | 31 |

Figure 11-055. Right Rotor Thrust Coefficient Versus Right Rotor Long. Cyclic ψ Degrees. $I_N = 30^\circ$ Full Scale
Airspeed 180 Knots.





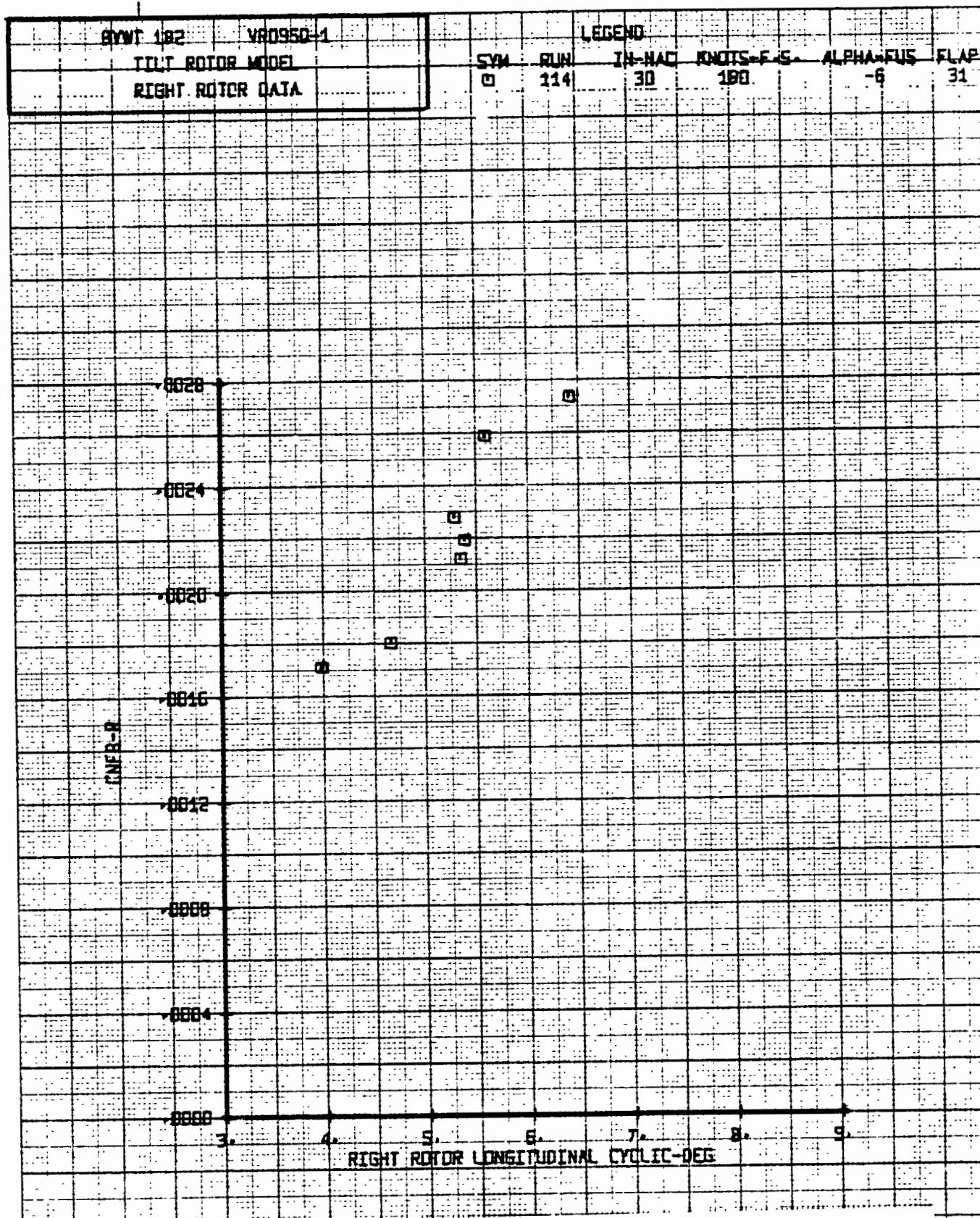
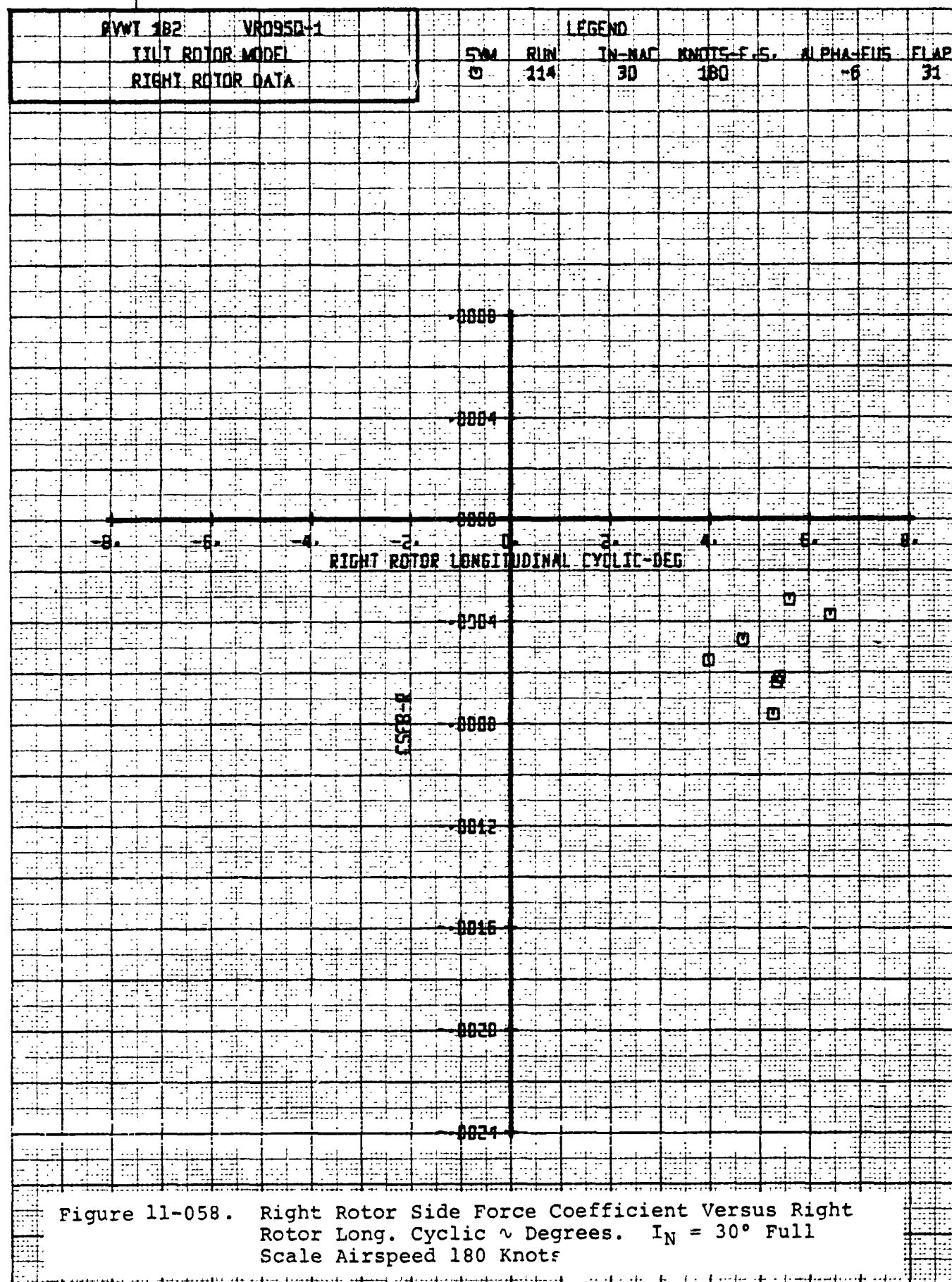


Figure 11-057. Right Rotor Normal Force Coefficient Versus Right Rotor Long. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.



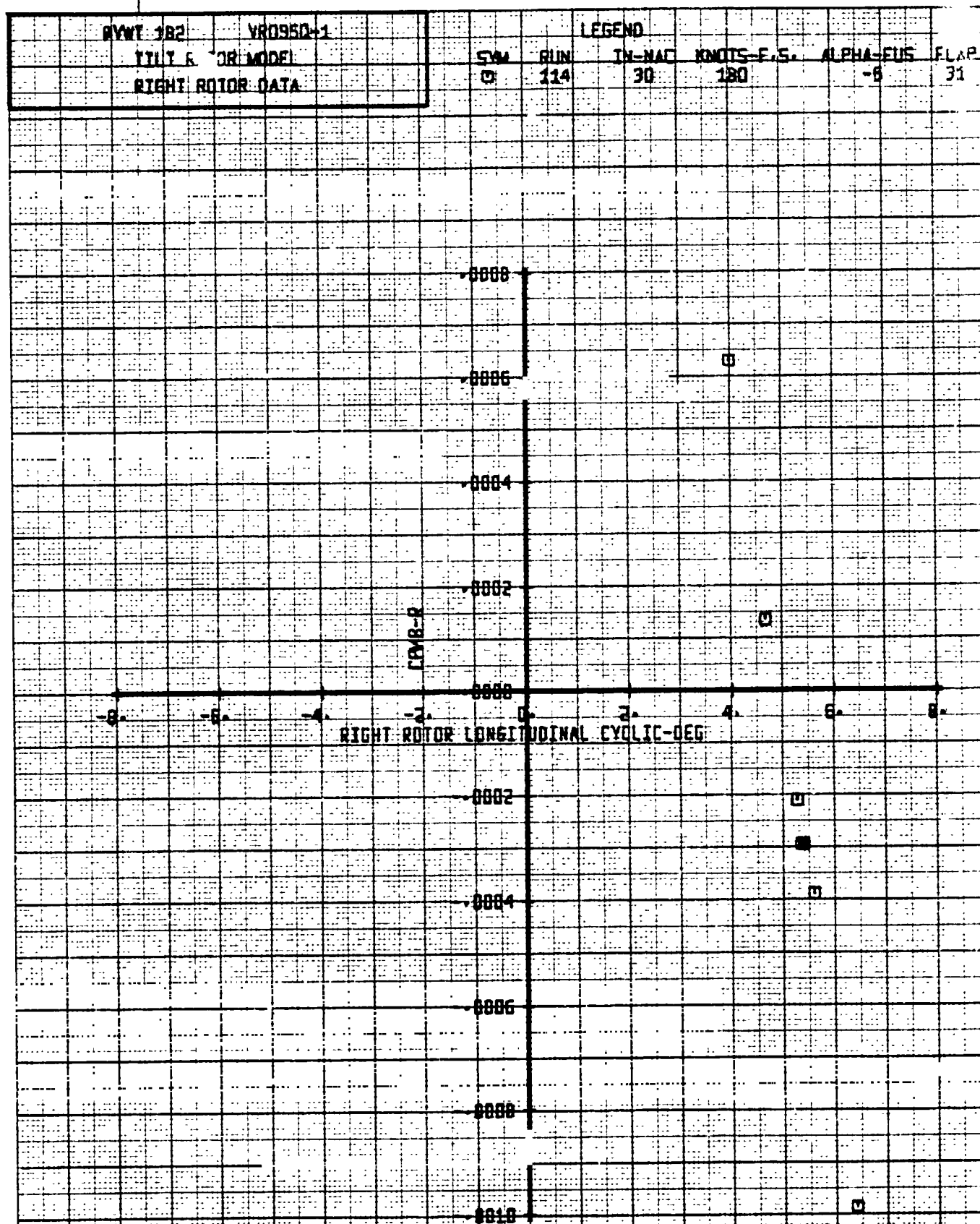


Figure 11-059. Right Rotor Pitching Moment Versus Right Rotor Long. Cyclic α Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.

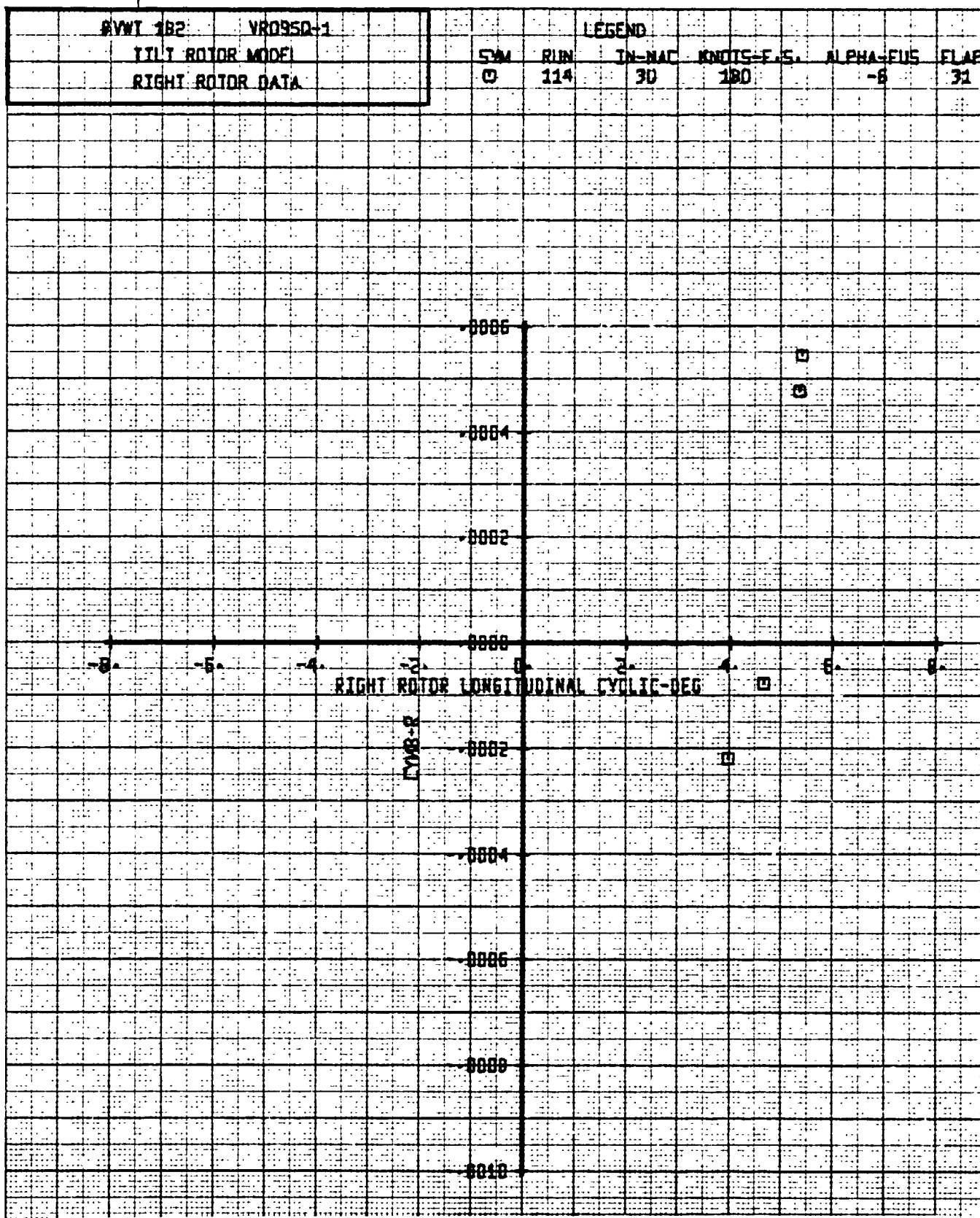
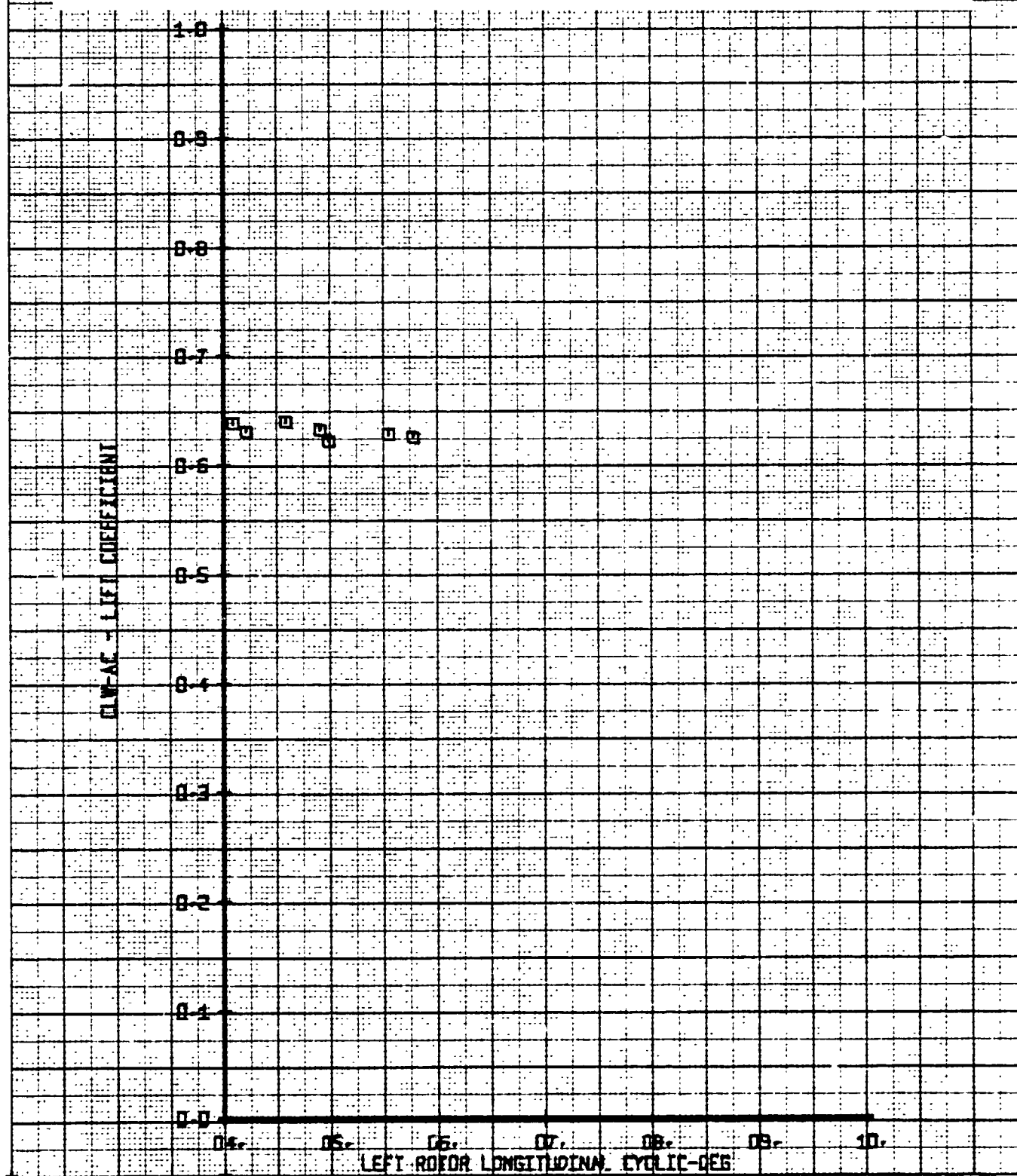
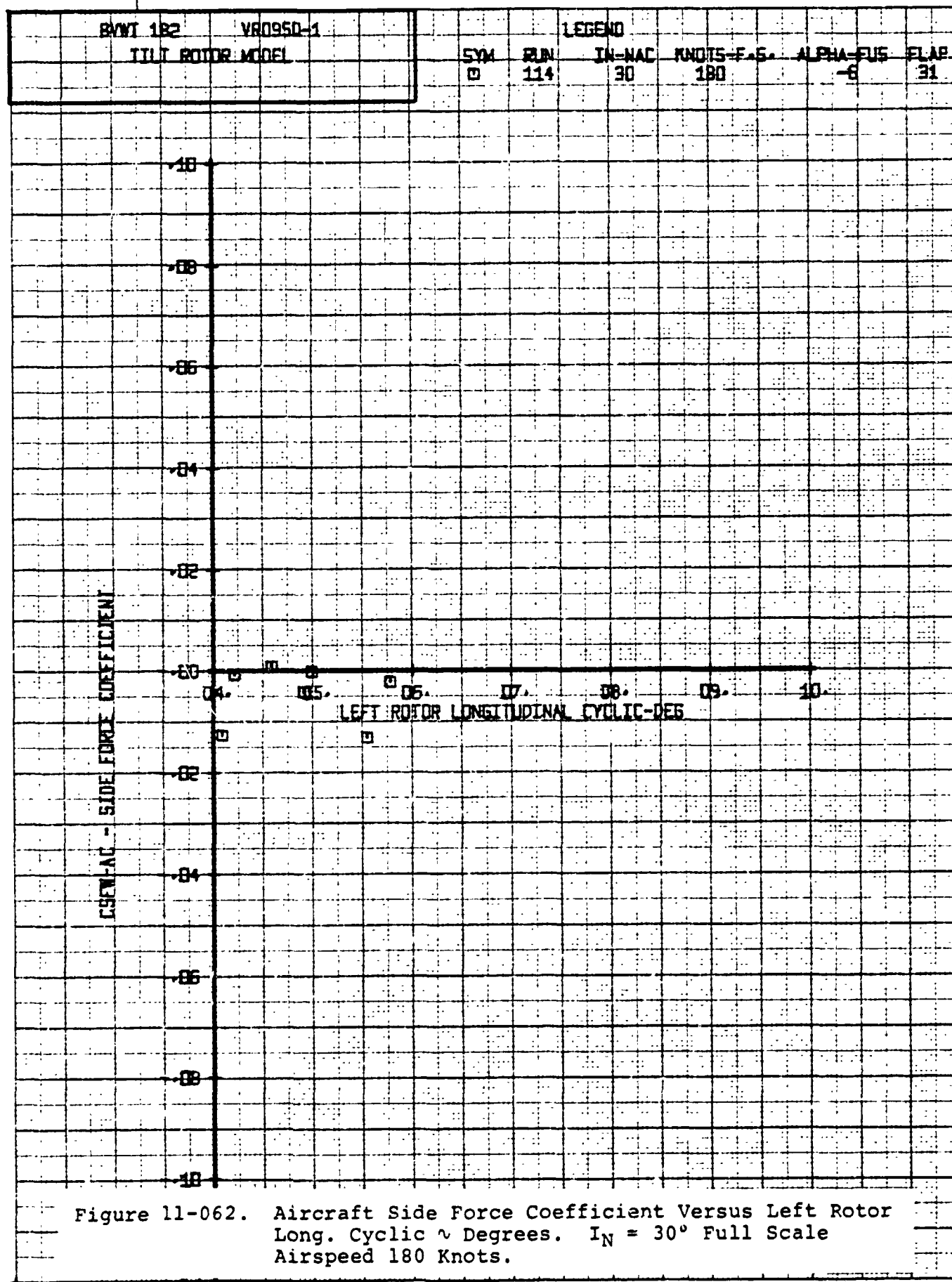


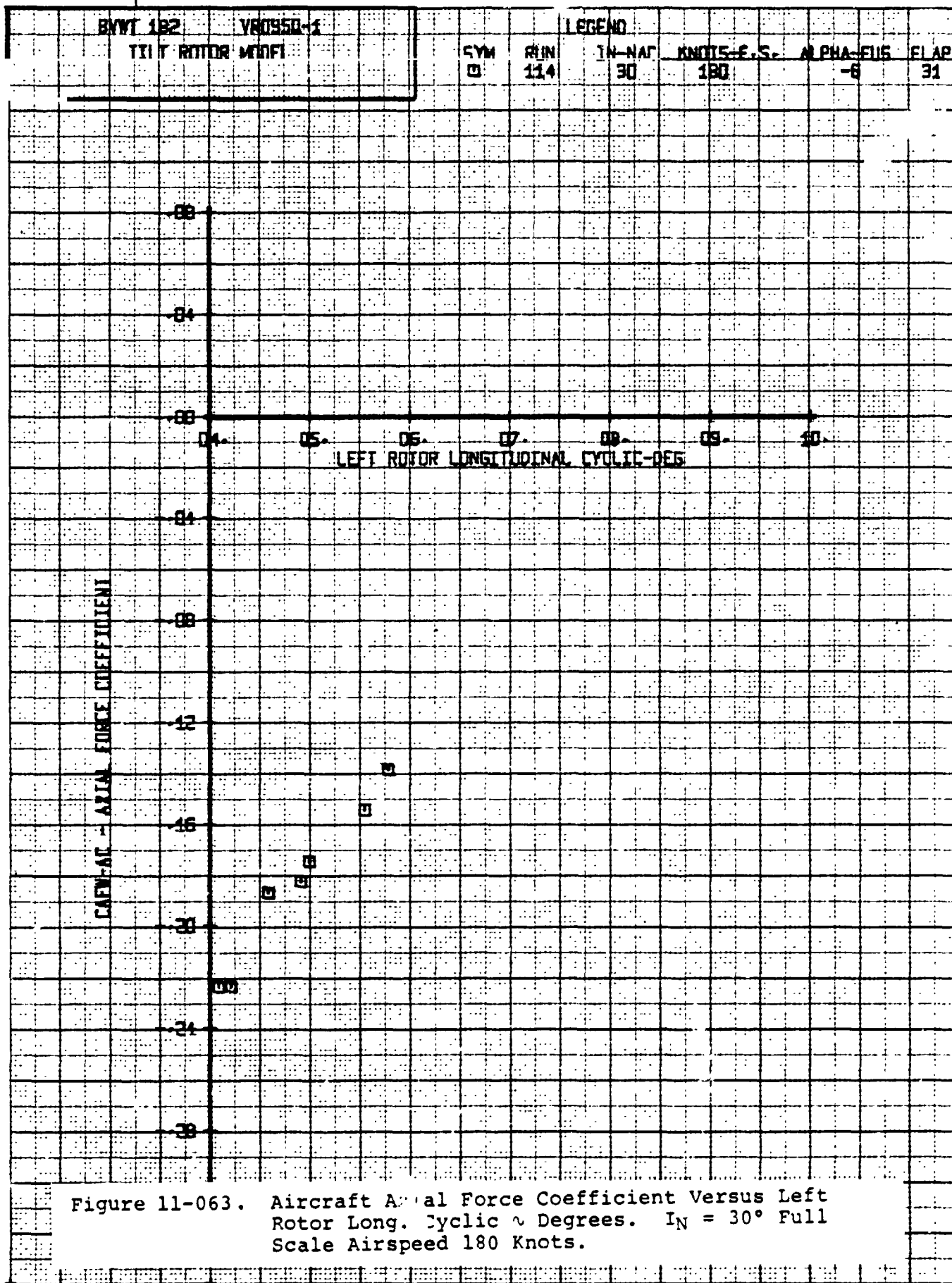
Figure 11-060. Right Rotor Yawing Moment Versus Right Rotor Long. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.

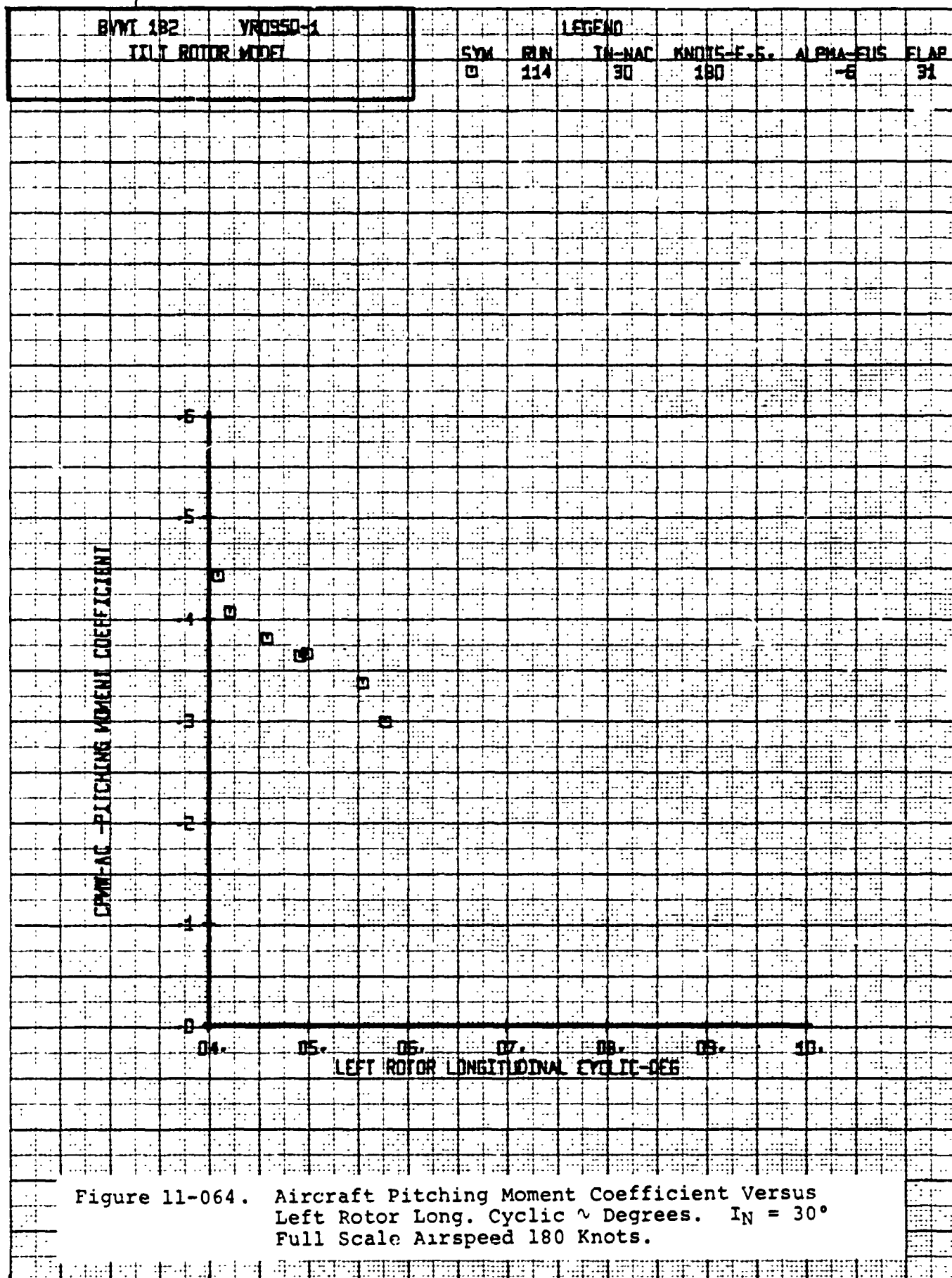
| BVWT 182 | | VR0950-1 | | LEGEND | | | | | |
|------------------|--|----------|--|--------|-----|--------|------------|-----------|------|
| TILT ROTOR MODEL | | | | SYM | RUN | IN-NAC | KNOTS-E.S. | ALPHA-EUS | FLAP |
| | | | | □ | 114 | 30 | 180 | -6 | 31 |

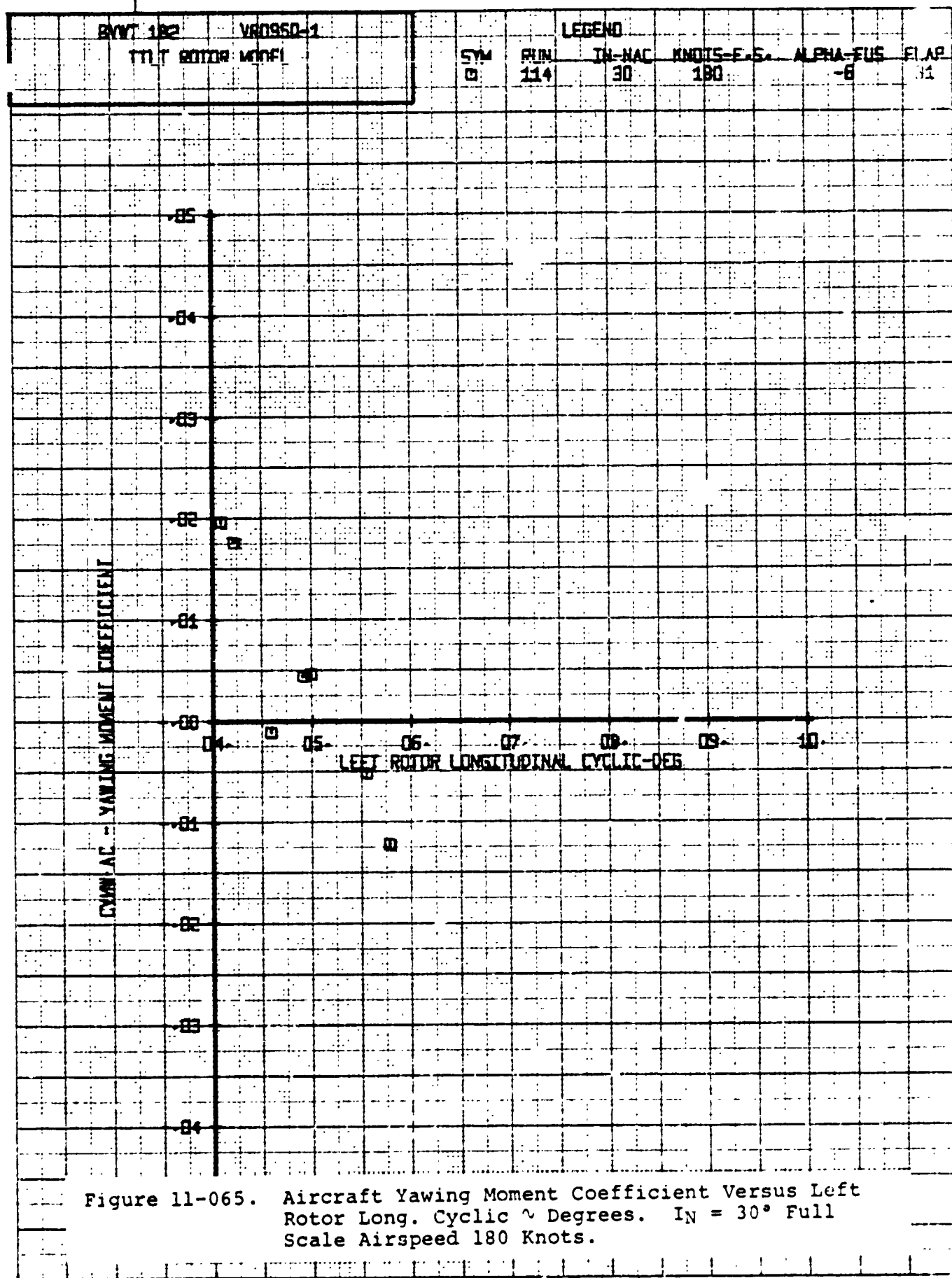
Figure 11-061. Aircraft Lift Coefficient Versus Left Rotor Long. Cyclic ψ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.

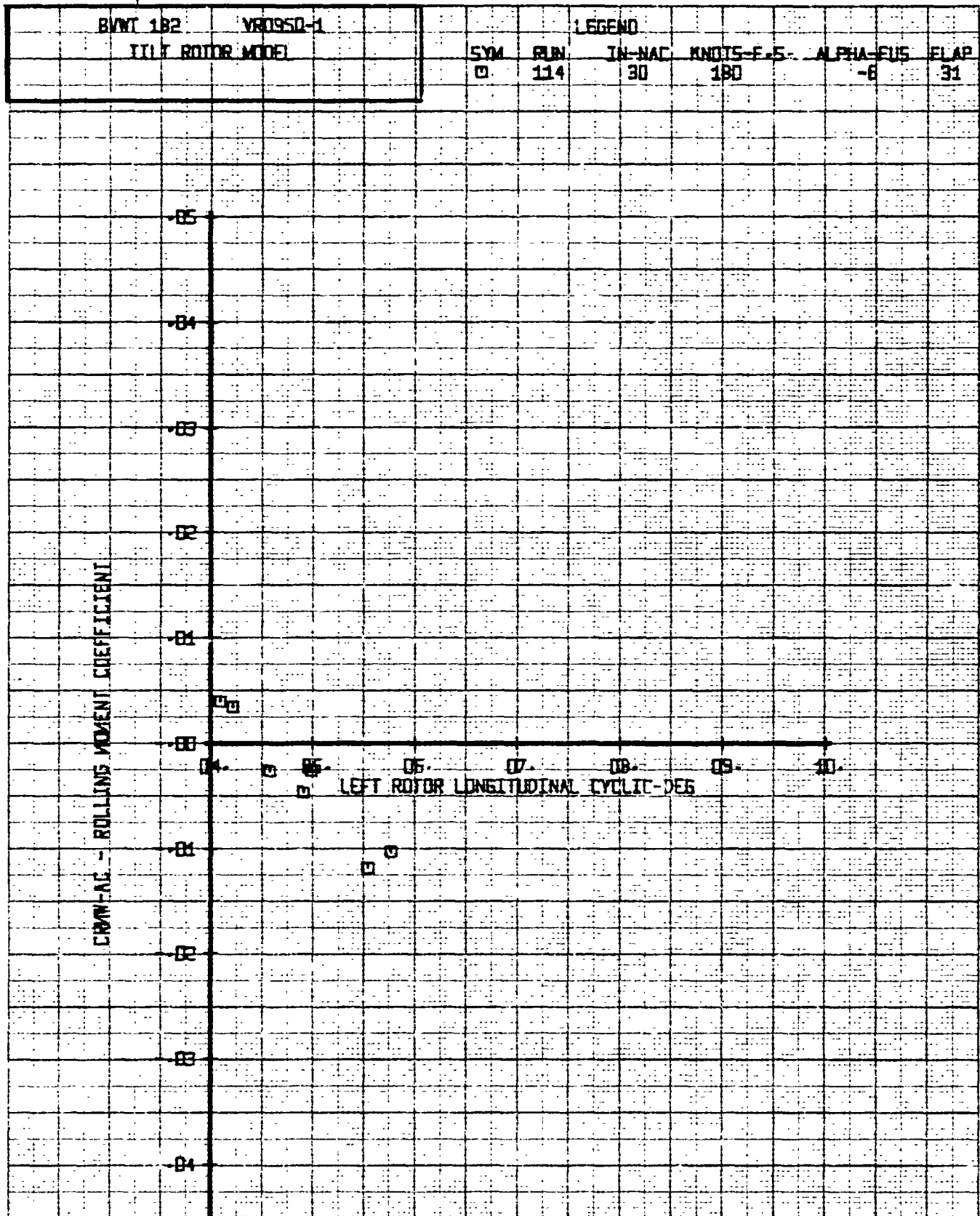


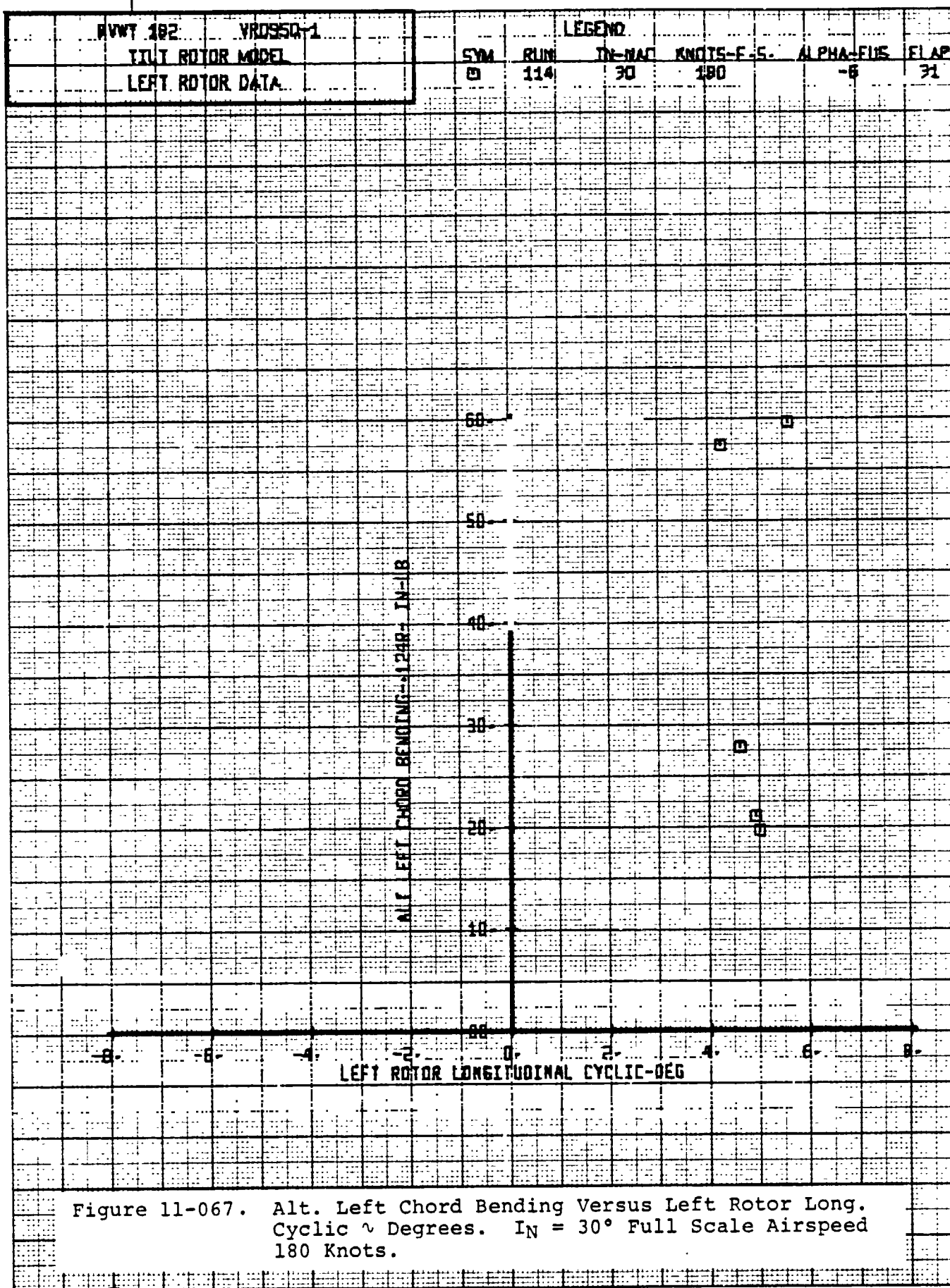






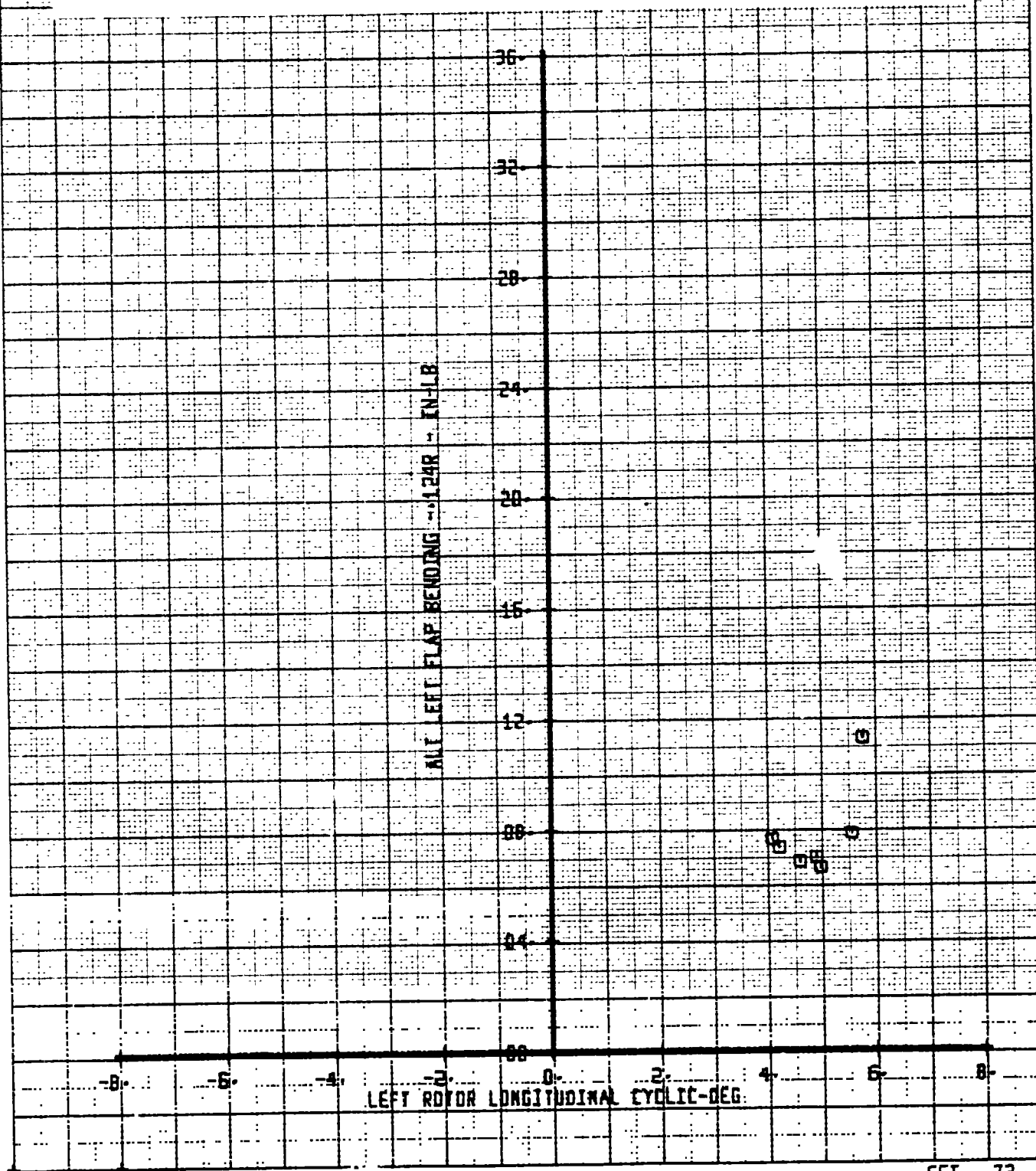






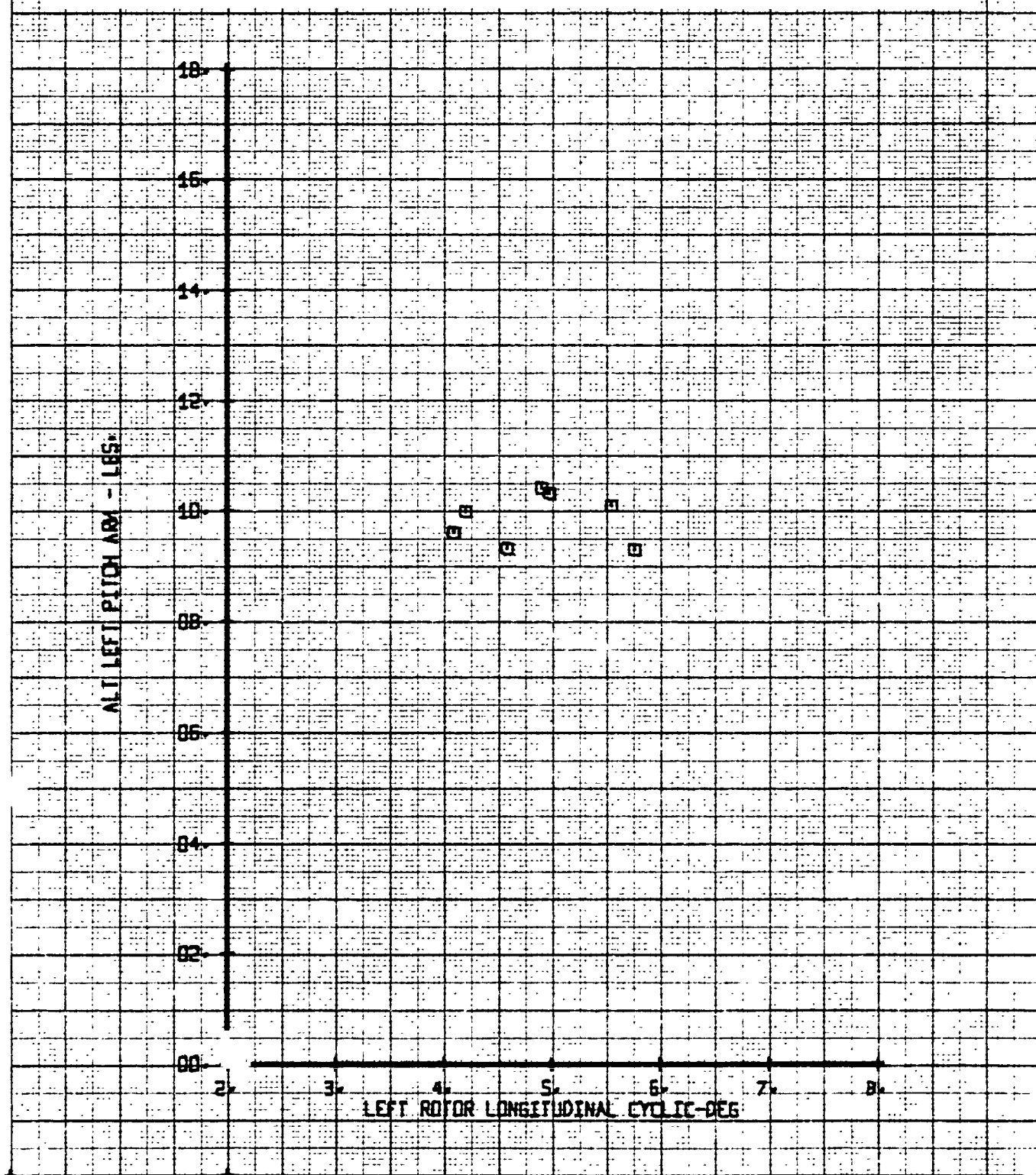
| | | | | | | | |
|-----------------|----------|--------|-----|--------|------------|-----------|------|
| #YWT 182 | VR0950-1 | LEGEND | | | | | |
| TIU ROTOR MODE | | SYM | RUN | IN-NAR | KNOTS-F.S. | ALPHA-EUS | FLAP |
| LEFT ROTOR DATA | | □ | 114 | 30 | 180 | -6 | 31 |

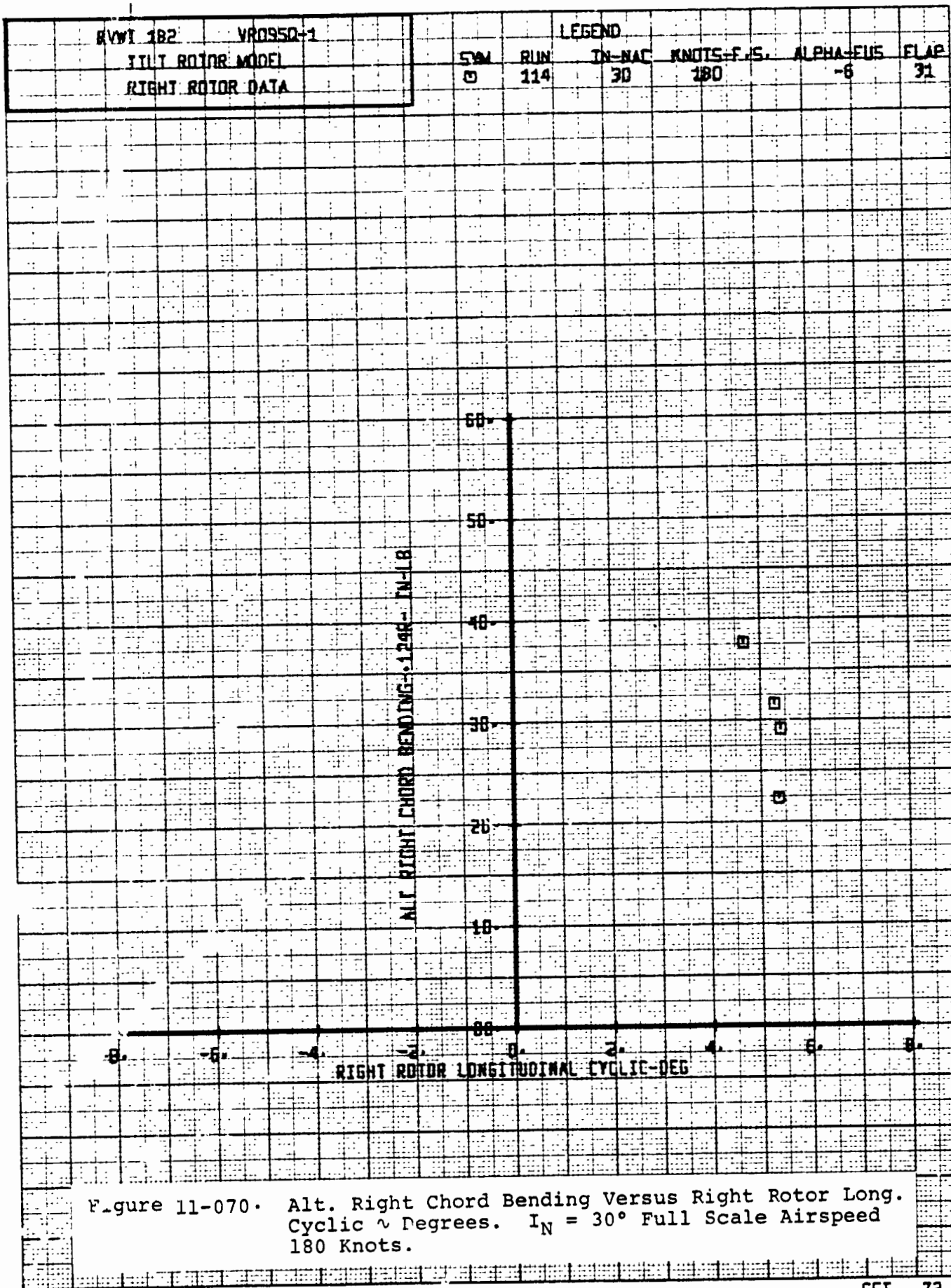
Figure 11-068. Alt. Left Flap Bending Versus Left Rotor Long. Cyclic ~ Degrees. IN = 30° Full Scale Airspeed 180 Knots.



| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | VROSSO-1 | LEGEND | | | | |
| LEFT ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FUS |
| LEFT ROTOR DATA | | 0 | 114 | 30 | 180 | -6 |
| | | | | | | 31 |

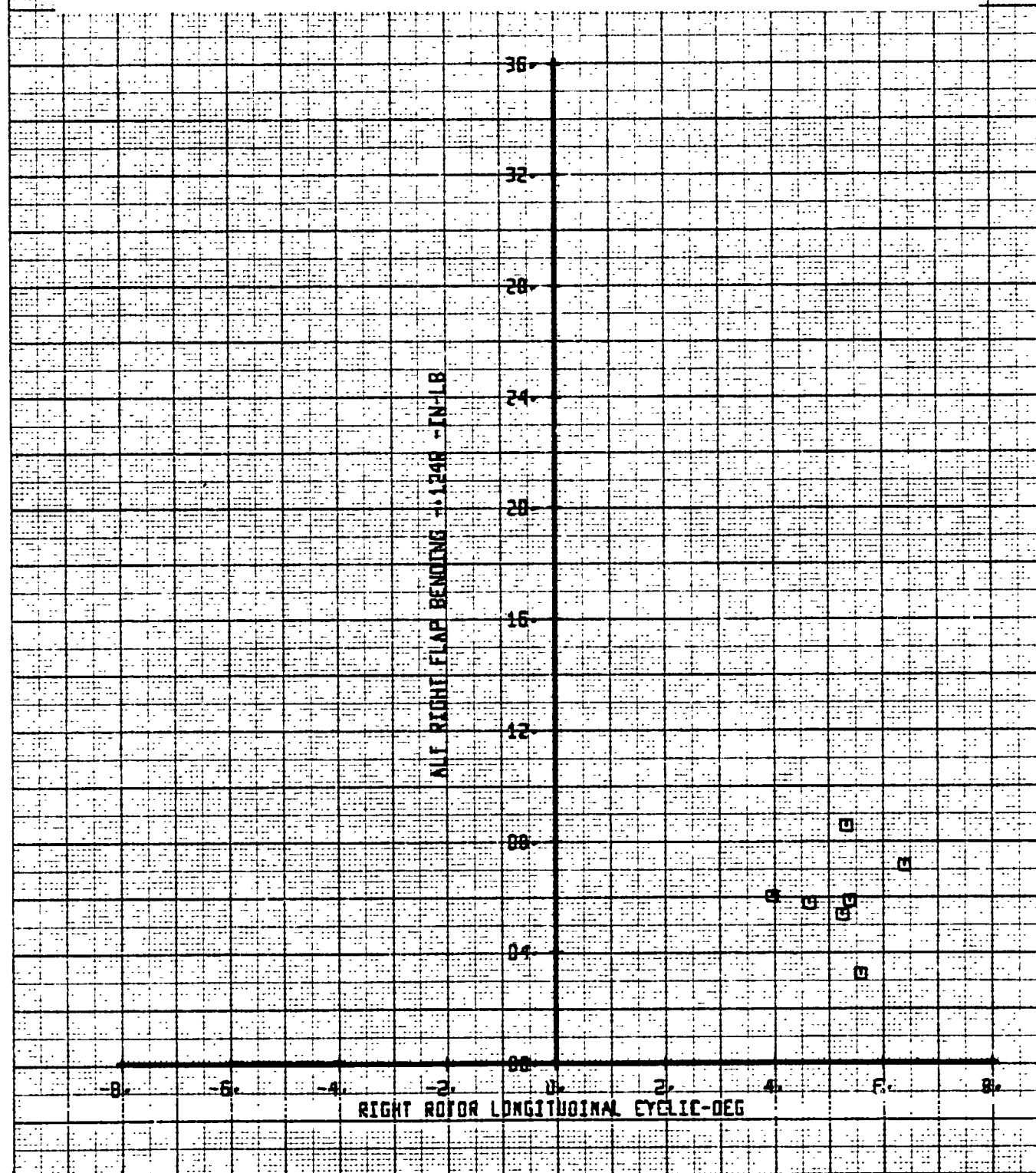
Figure 11-069. Alt. Left Pitch Link Load Versus Left Rotor Long. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.

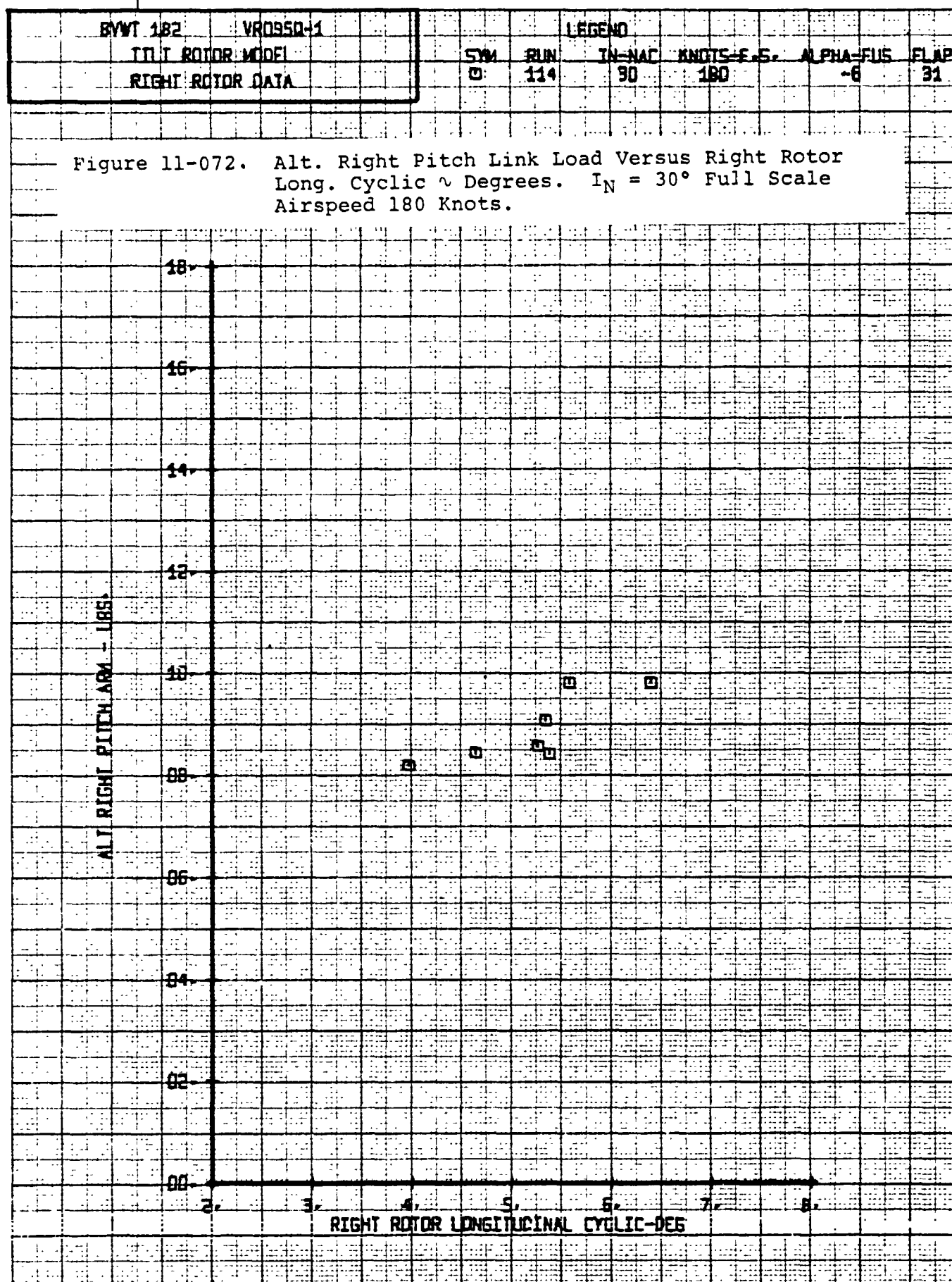




| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | VROSSQ-1 | LEGEND | | | | |
| YILT ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-E.S. | ALPHA-EUS |
| RIGHT ROTOR DATA | | □ | 114 | 30 | 180 | -6 |
| | | | | | | FLAP 31 |

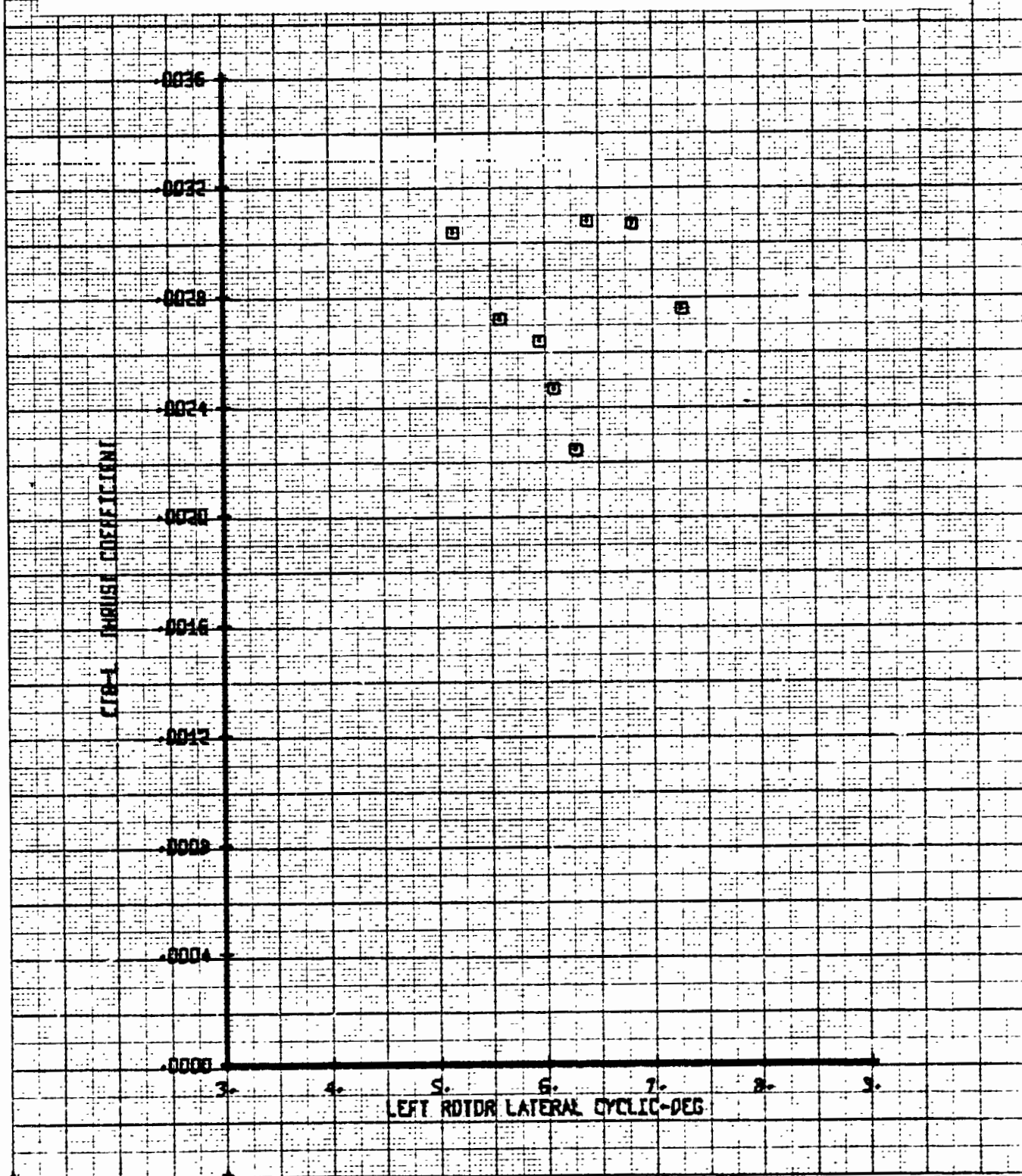
Figure 11-071. Alt. Right Flap Bending Versus Right Rotor Long. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.





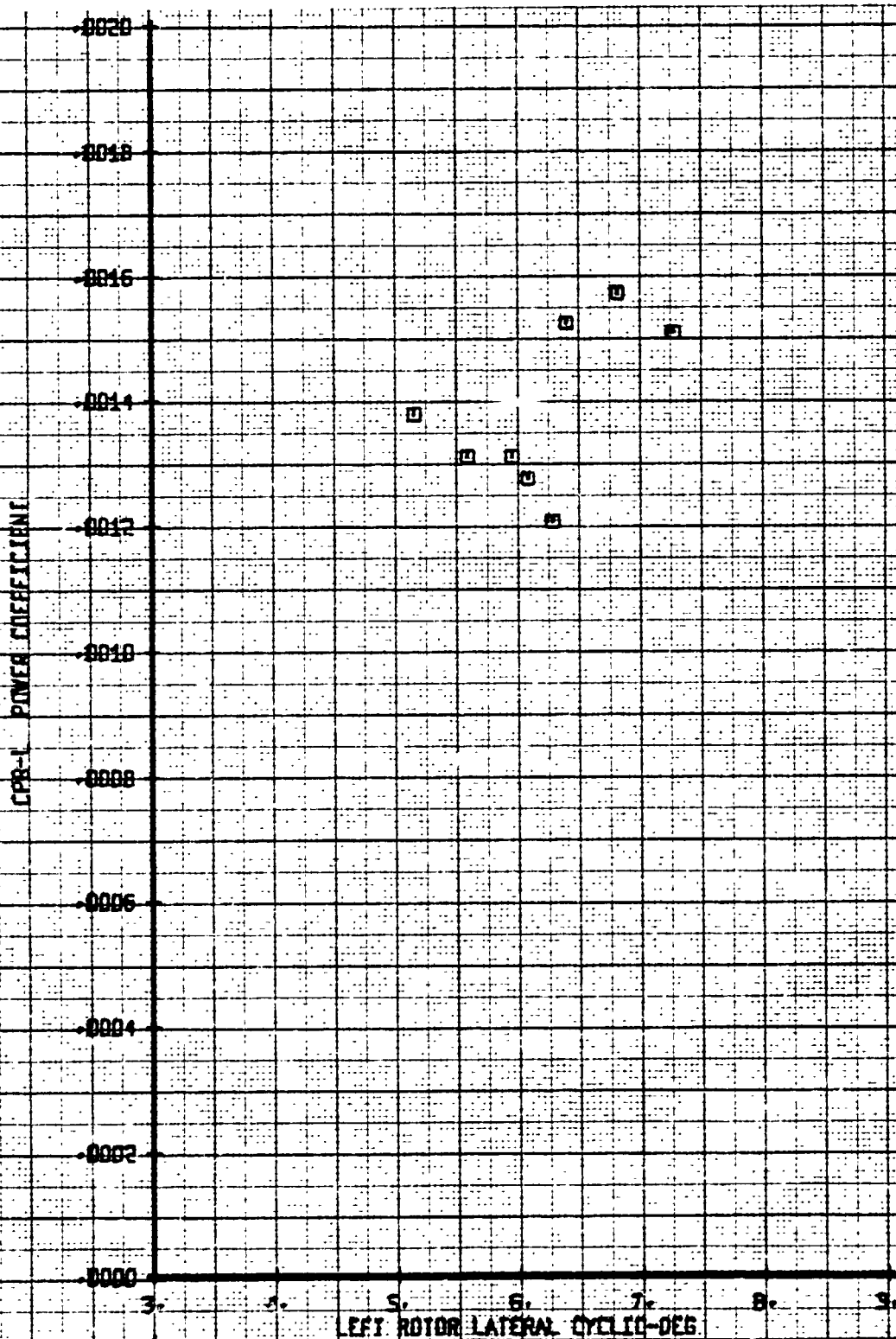
| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | VR0950-1 | LEGEND | | | | |
| TILT ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FUS |
| LEFT ROTOR DATA | | □ | 113 | 30 | 100 | -6 |
| | | | | | | FLAP 31 |

Figure 11-073. Left Rotor Thrust Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale
Airspeed 180 Knots.



| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BWVT 182 | VR0950-1 | LEGEND | | | | |
| TILT ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FUS |
| LEFT ROTOR DATA | | □ | 113 | 30 | 180 | -6 |
| | | | | | | FLAP 31 |

Figure 11-074. Left Rotor Power Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale
Airspeed 180 Knots.



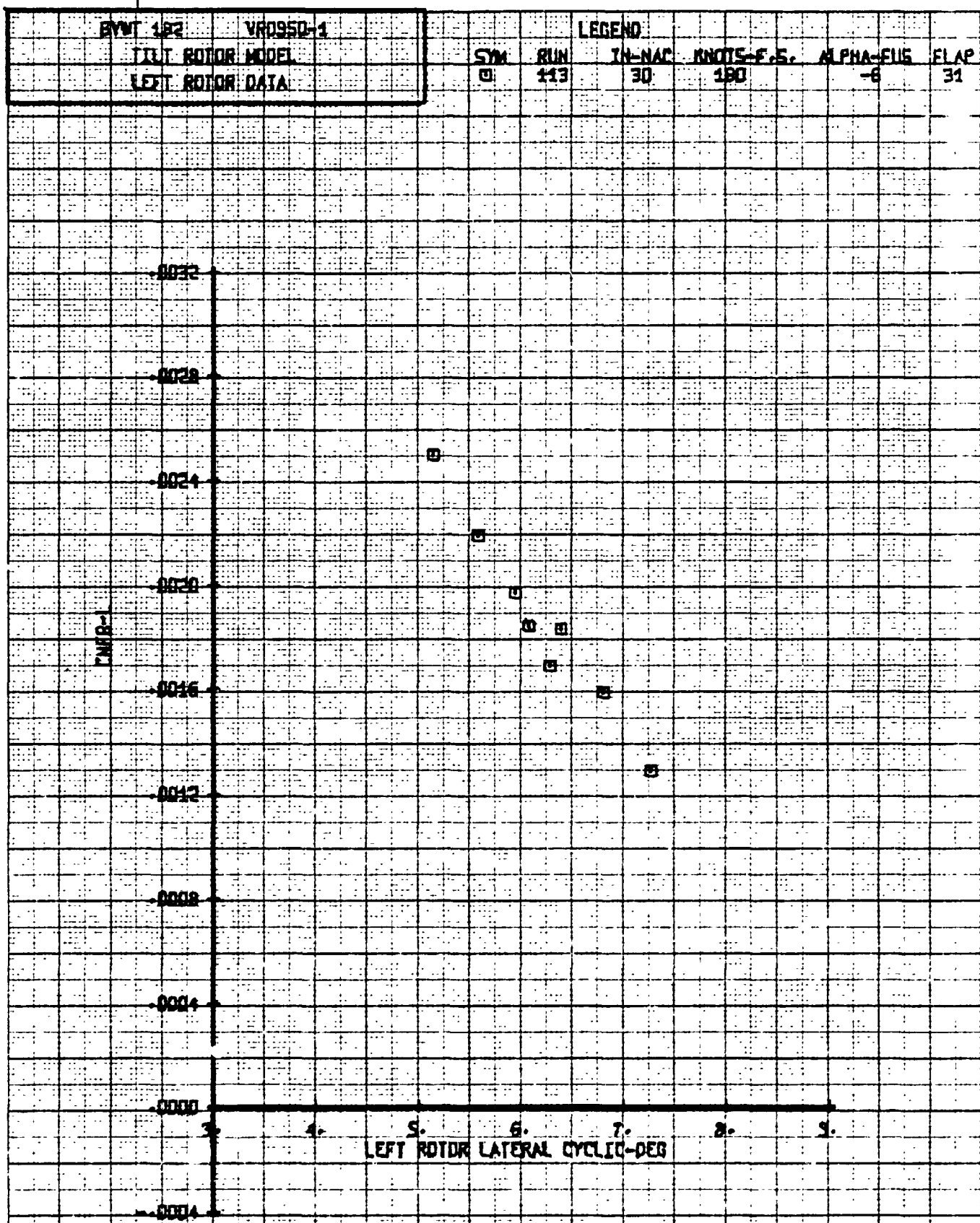
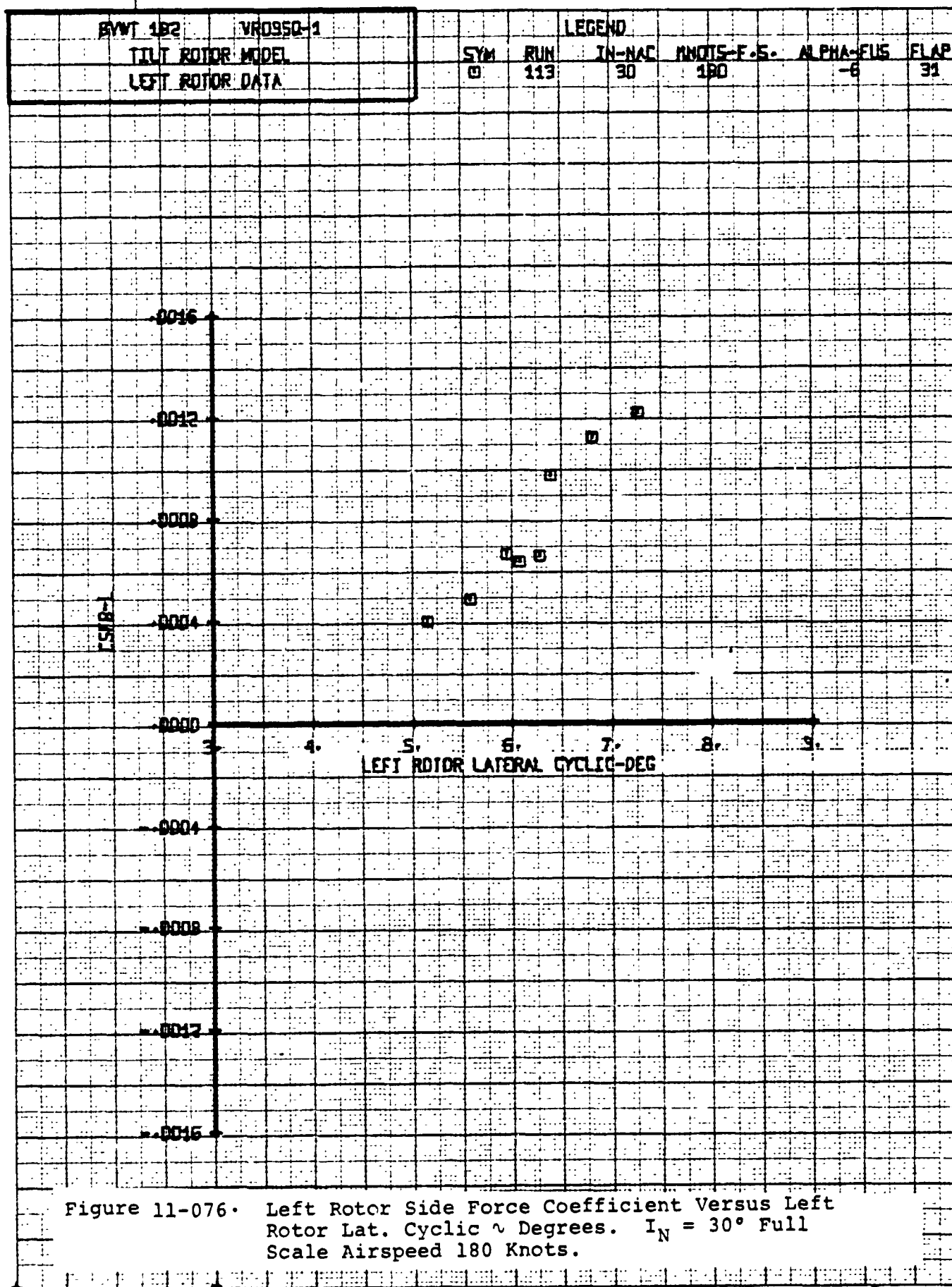
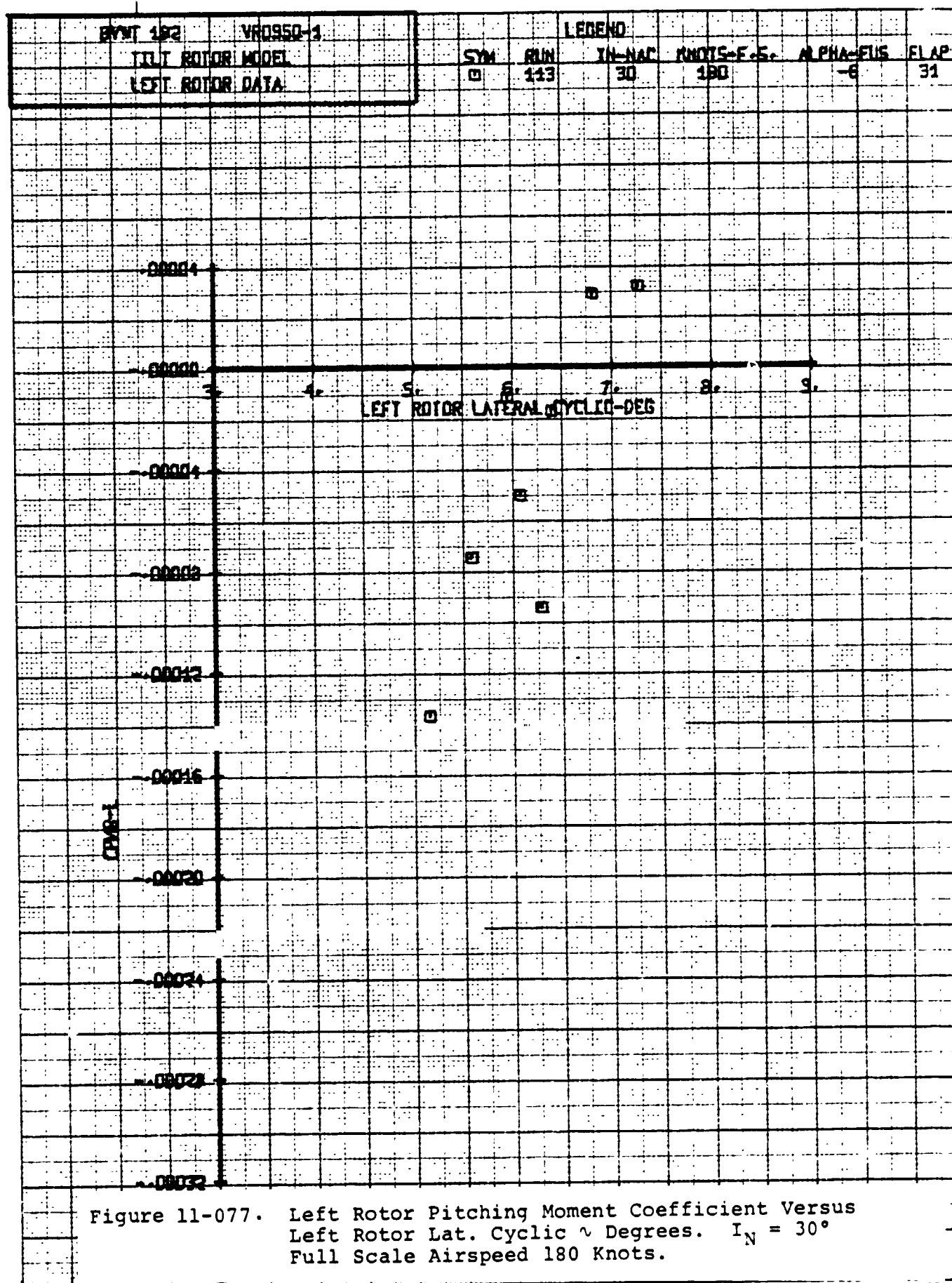
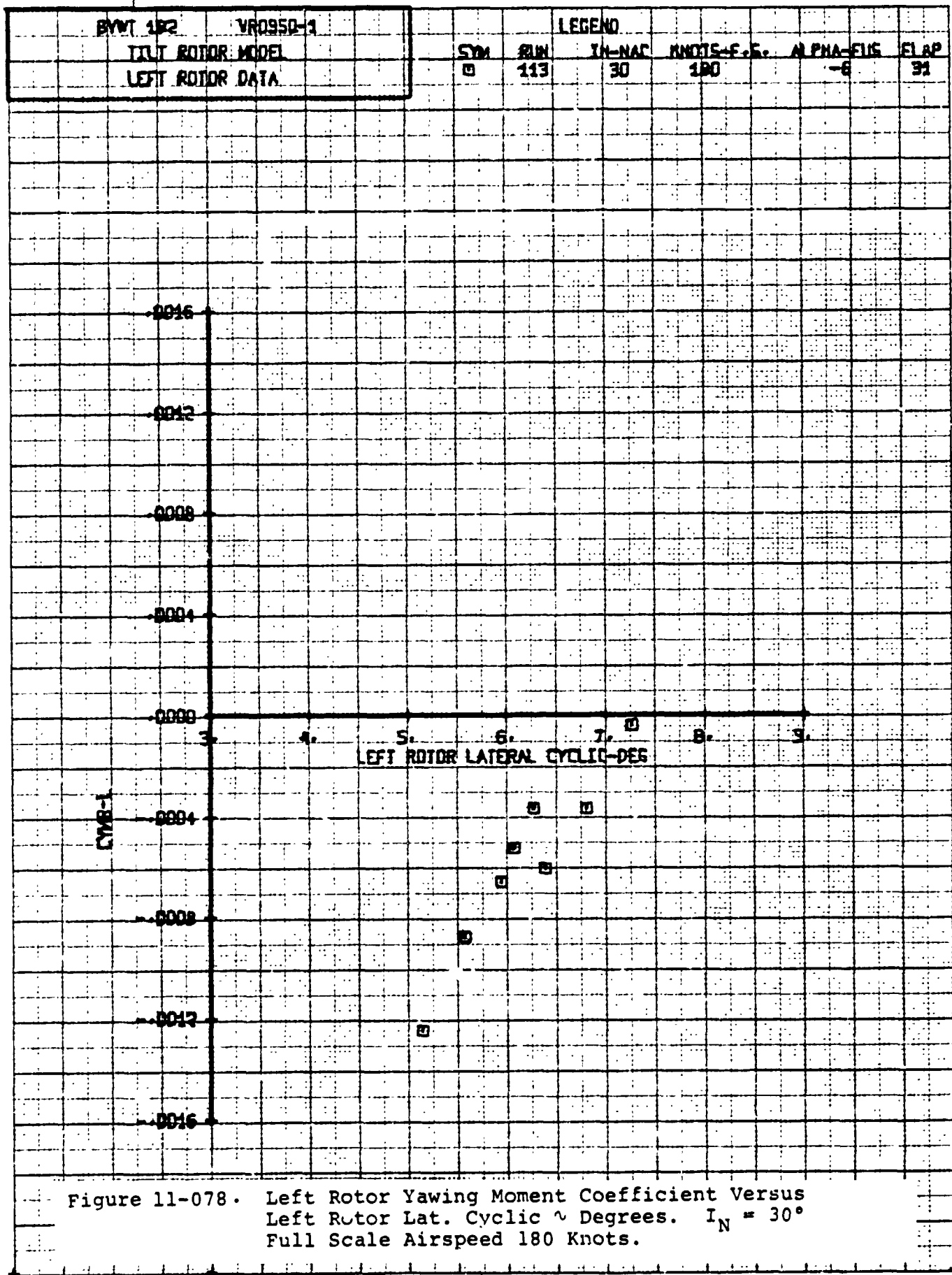
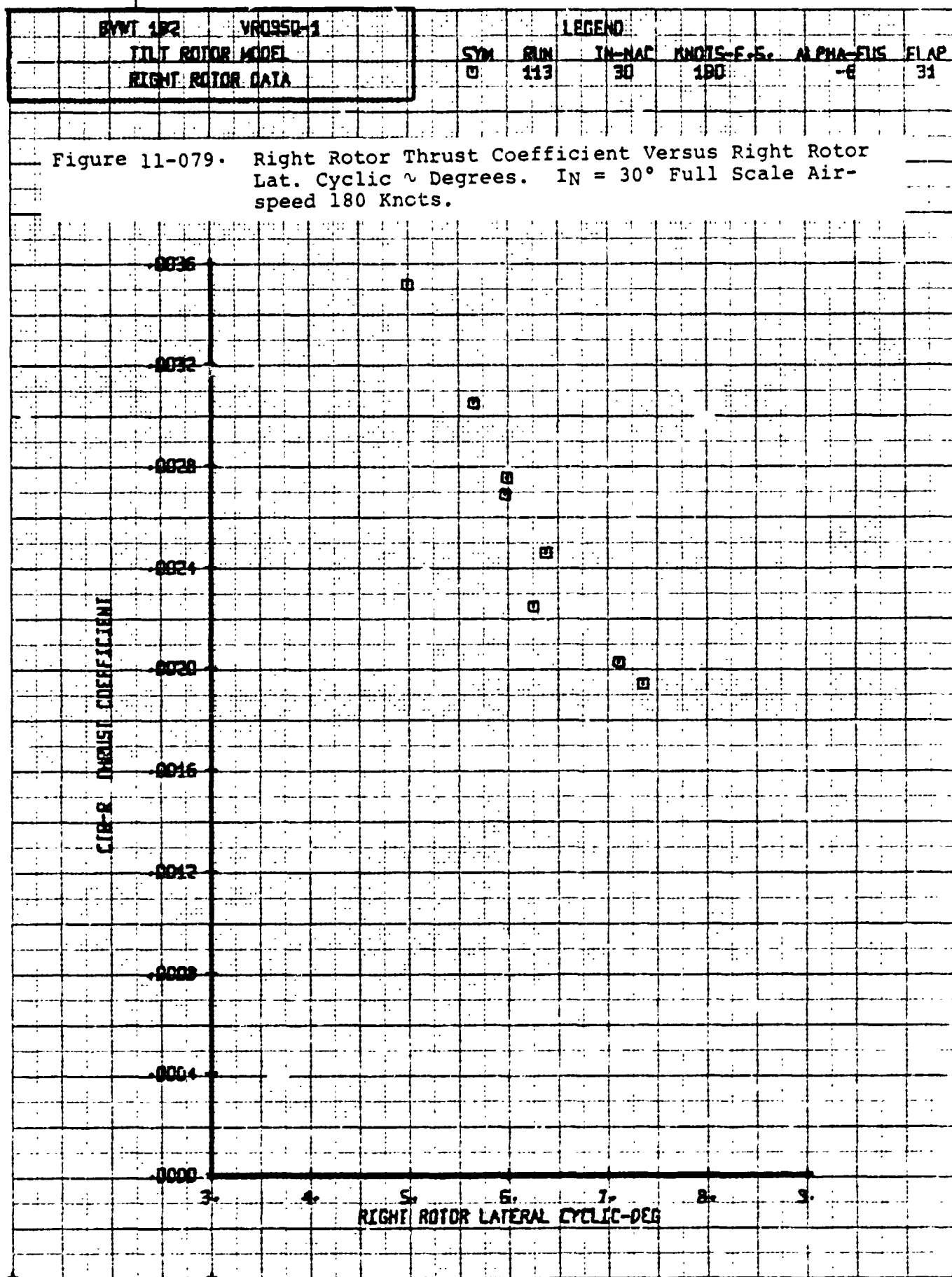


Figure 11-075. Left Rotor Normal Force Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.



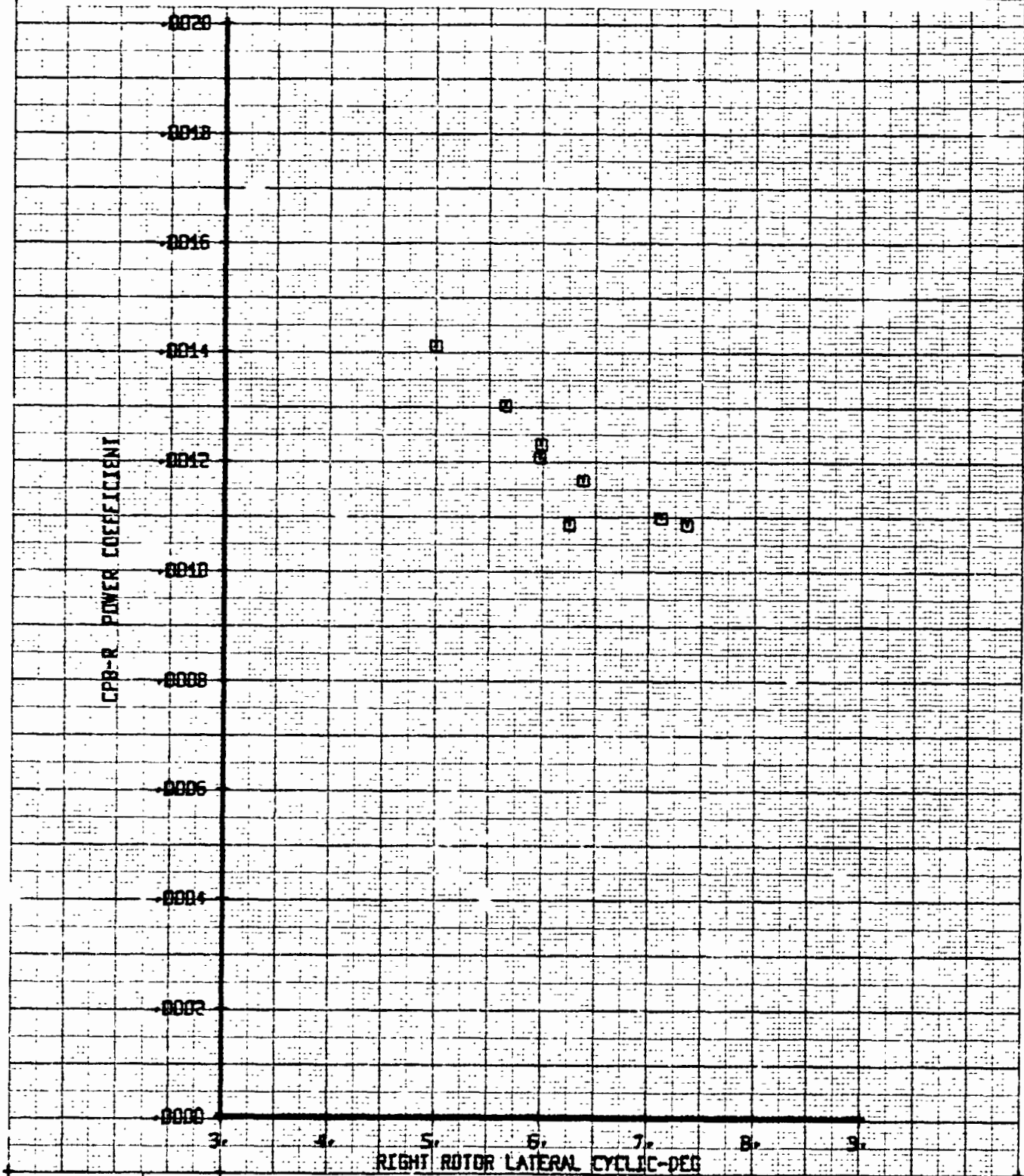






| | | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|------|
| BYWT 182 | VRU950-1 | LEGEND | | | | | |
| LEFT ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FUE | FLAP |
| RIGHT ROTOR DATA | | 0 | 113 | 30 | 180 | -6 | 31 |

Figure 11-080. Right Rotor Power Coefficient Versus Right Rotor Lat. Cyclic ψ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.



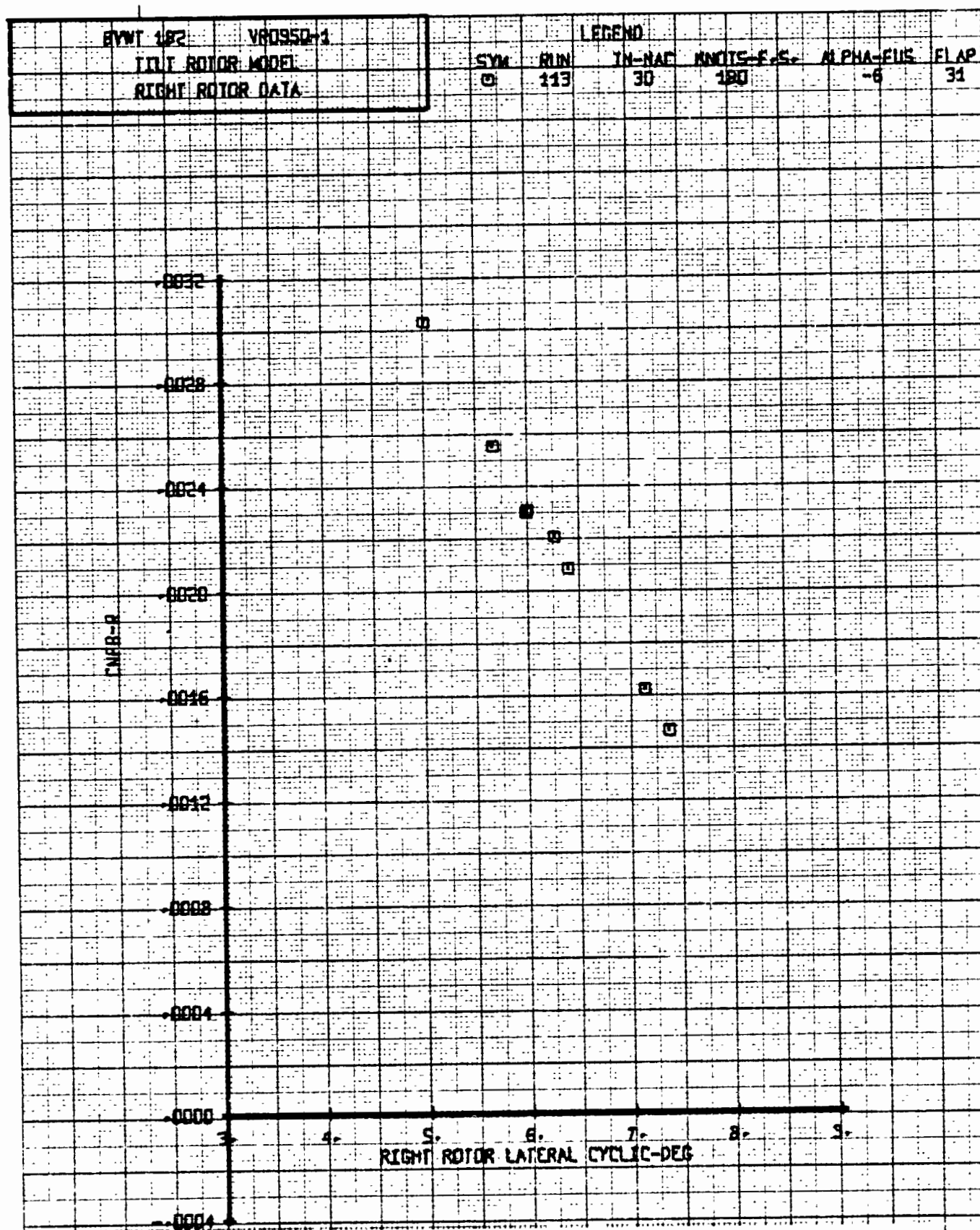


Figure 11-081. Right Rotor Normal Force Coefficient Versus Right Rotor Lat. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.

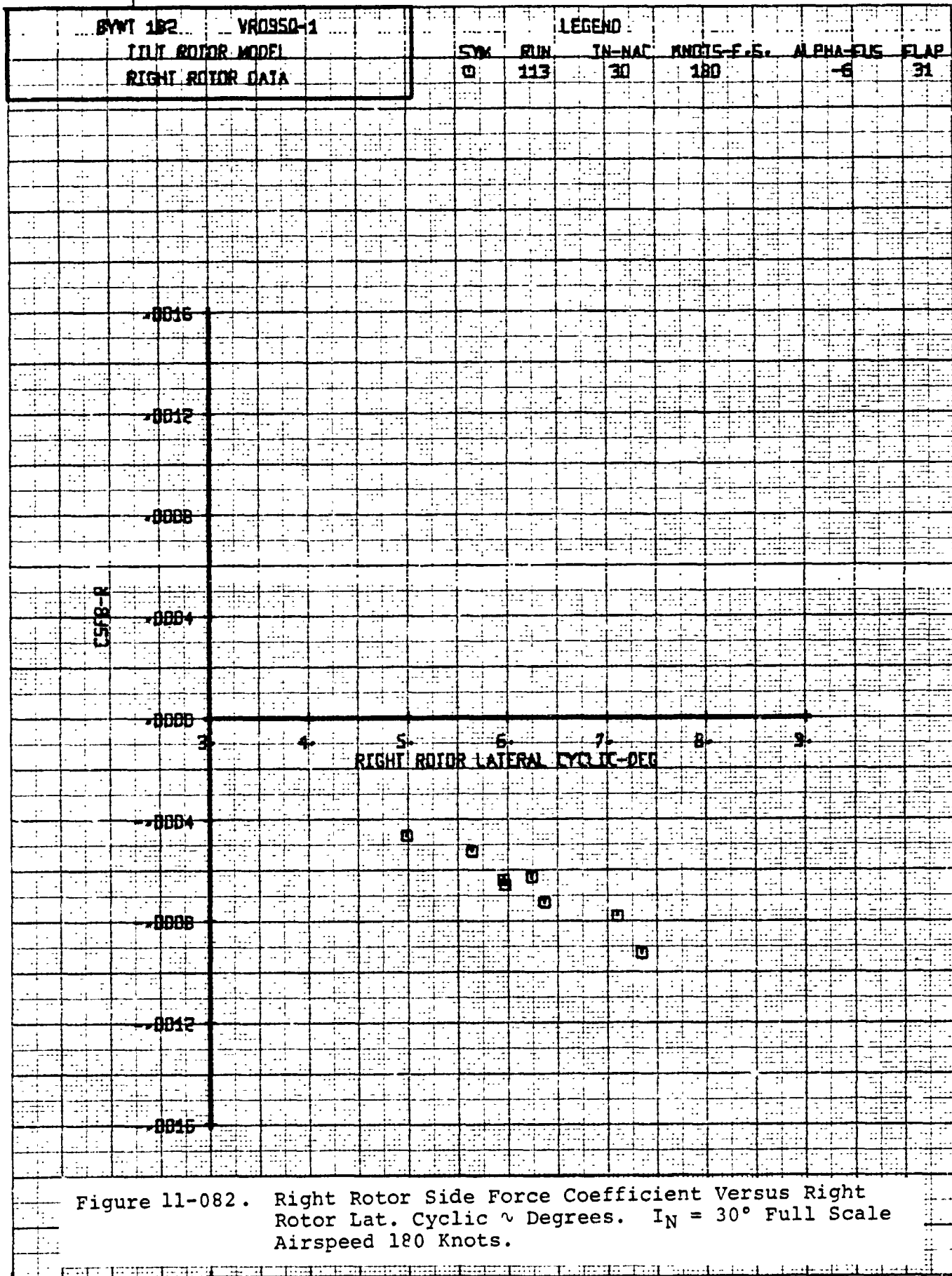
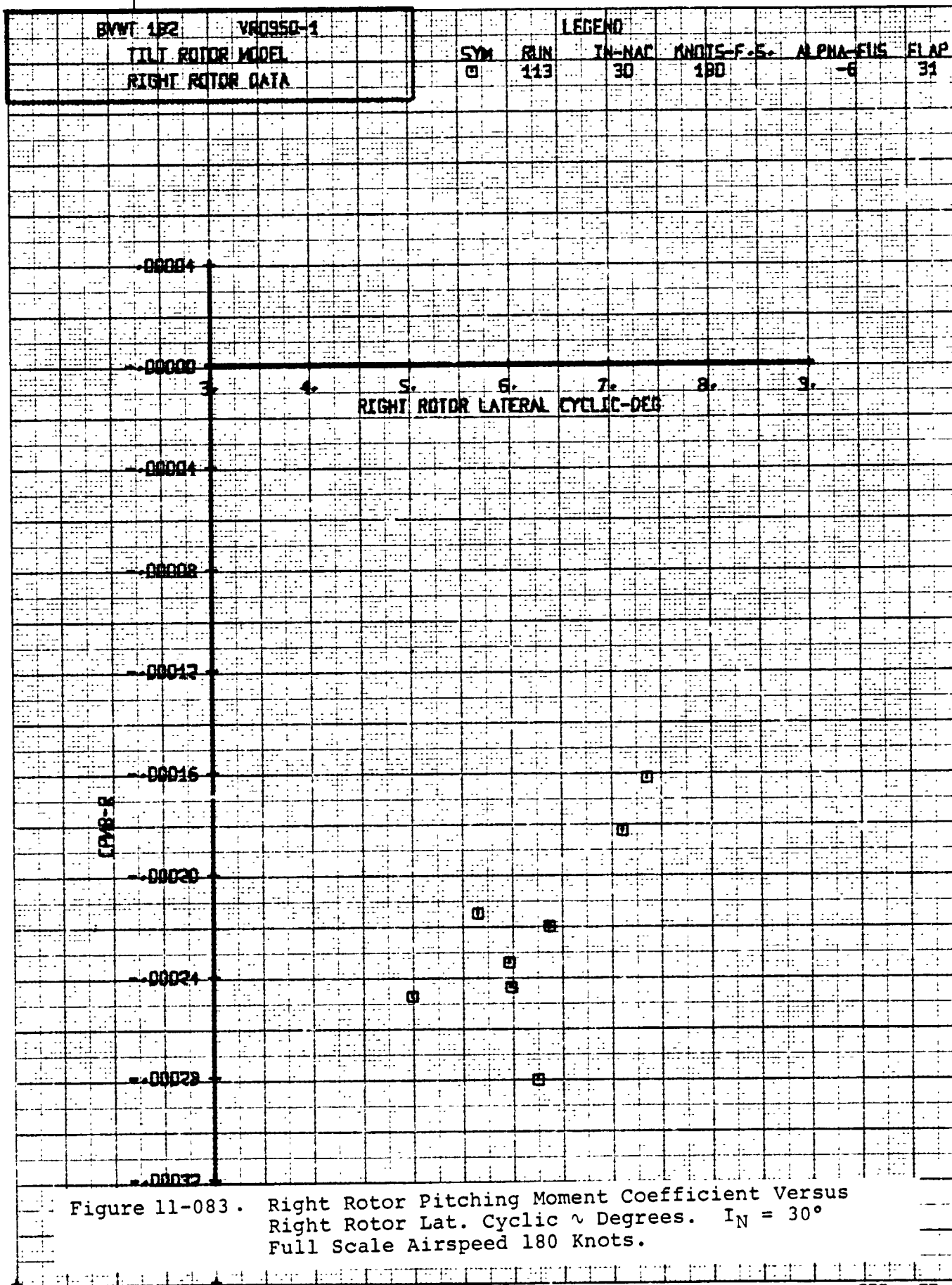
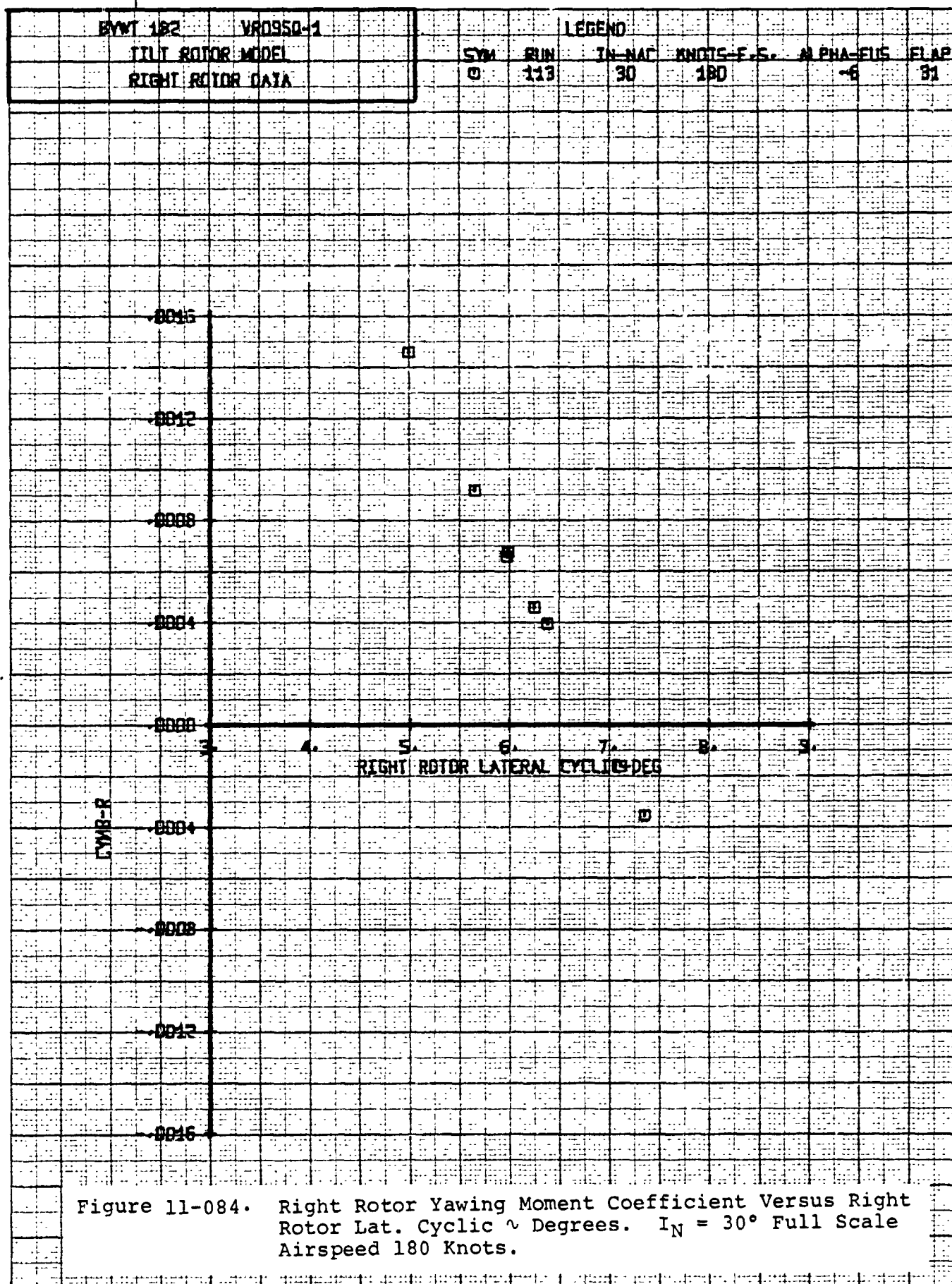


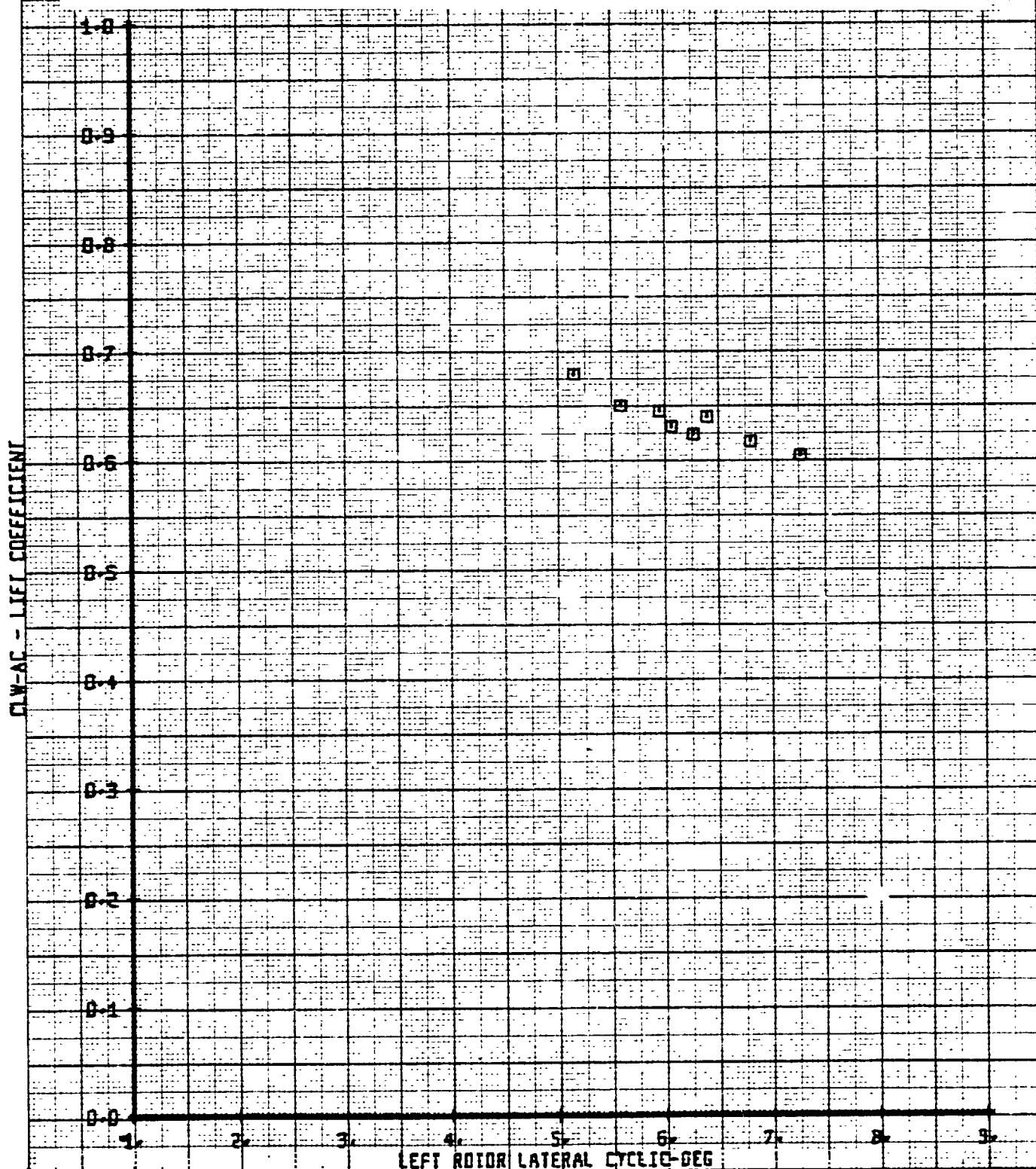
Figure 11-082. Right Rotor Side Force Coefficient Versus Right Rotor Lat. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.

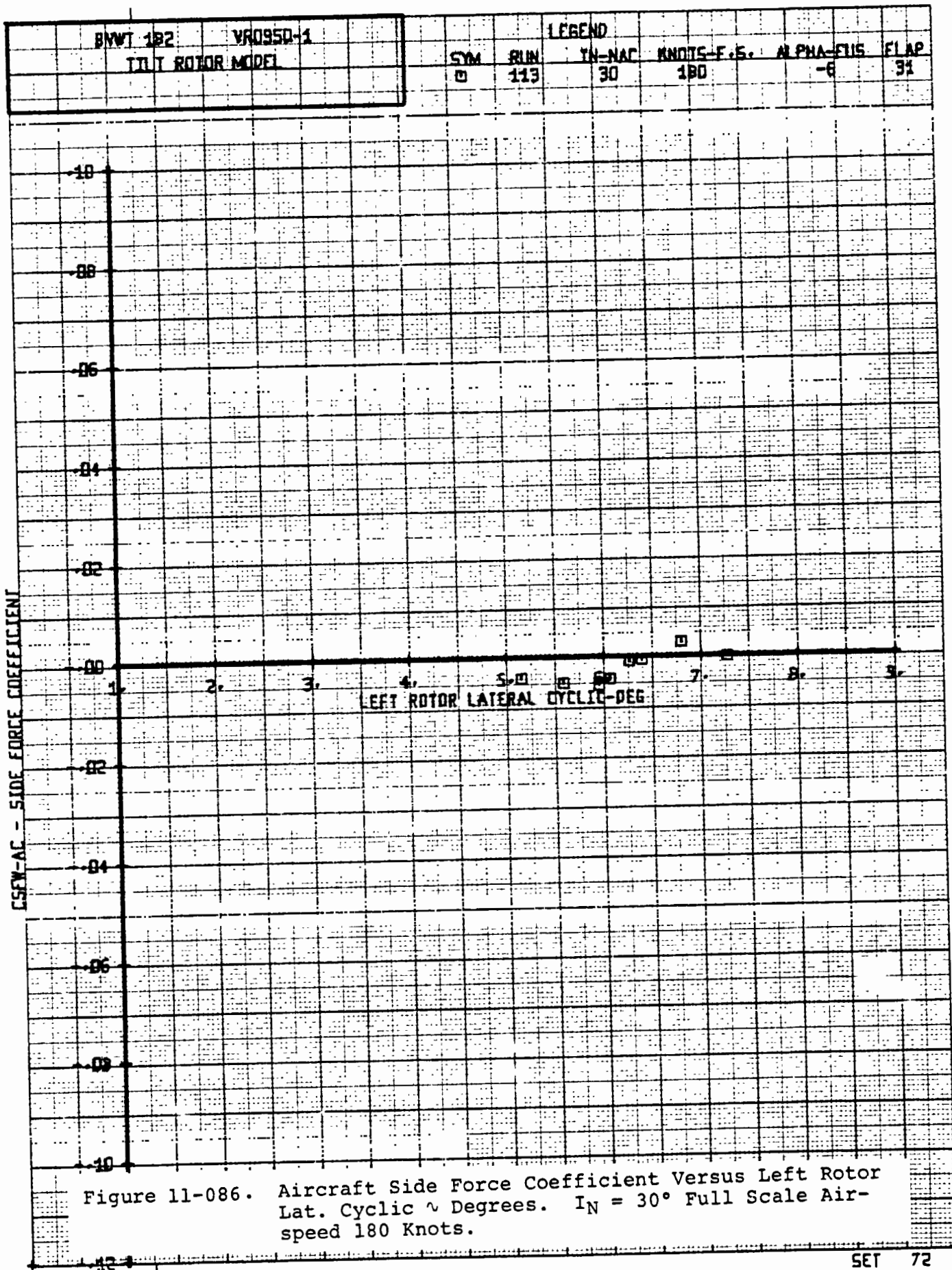




| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | VR0950-1 | LEGEND | | | | |
| LEFT ROTOR MODEL | | SYM | PRN | IN-NAC | KNOTS-F.S. | ALPHA-FUS |
| | | □ | 113 | 30 | 180 | -6 |
| | | | | | | 31 |

Figure 11-085. Aircraft Lift Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.





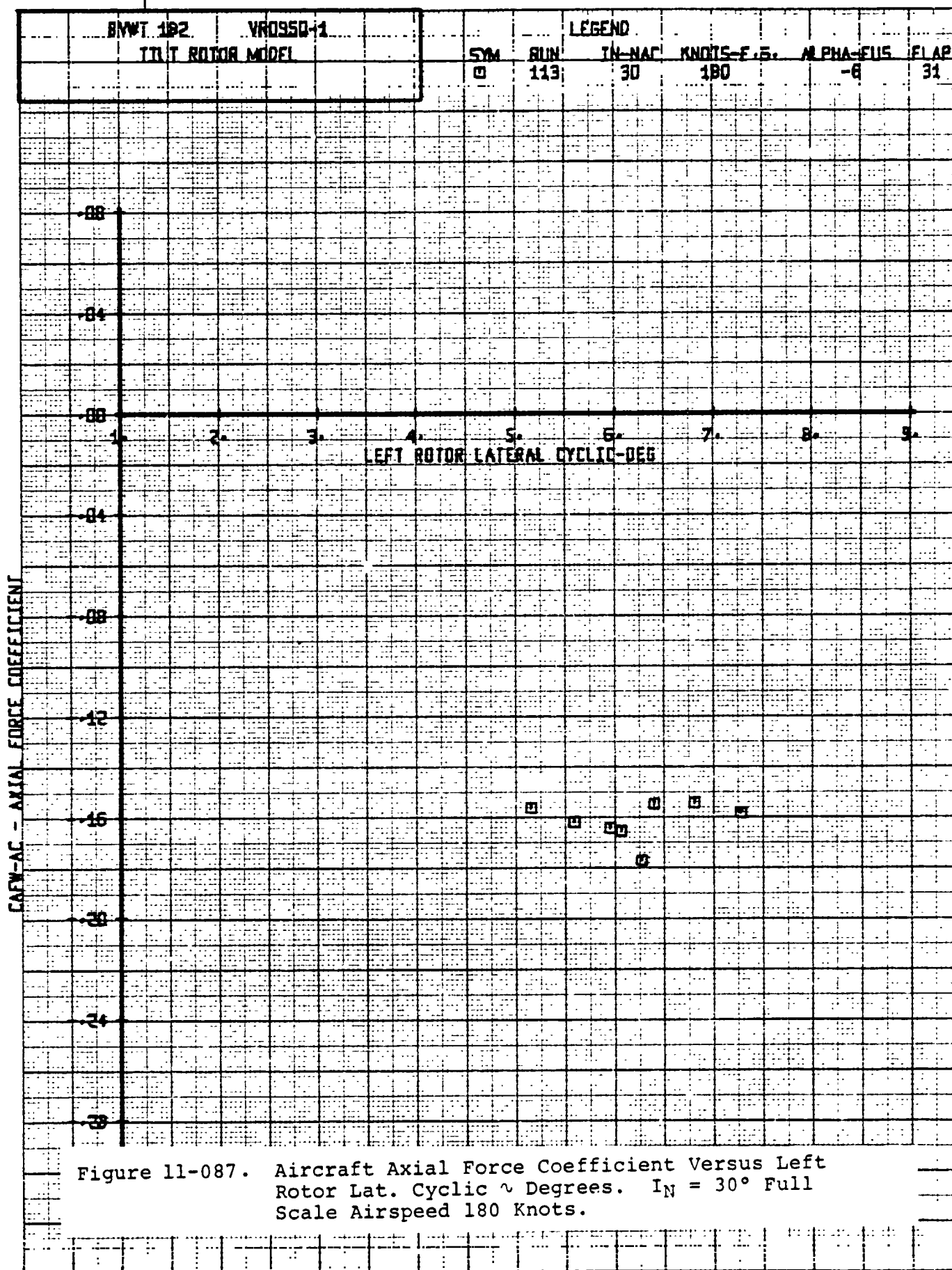
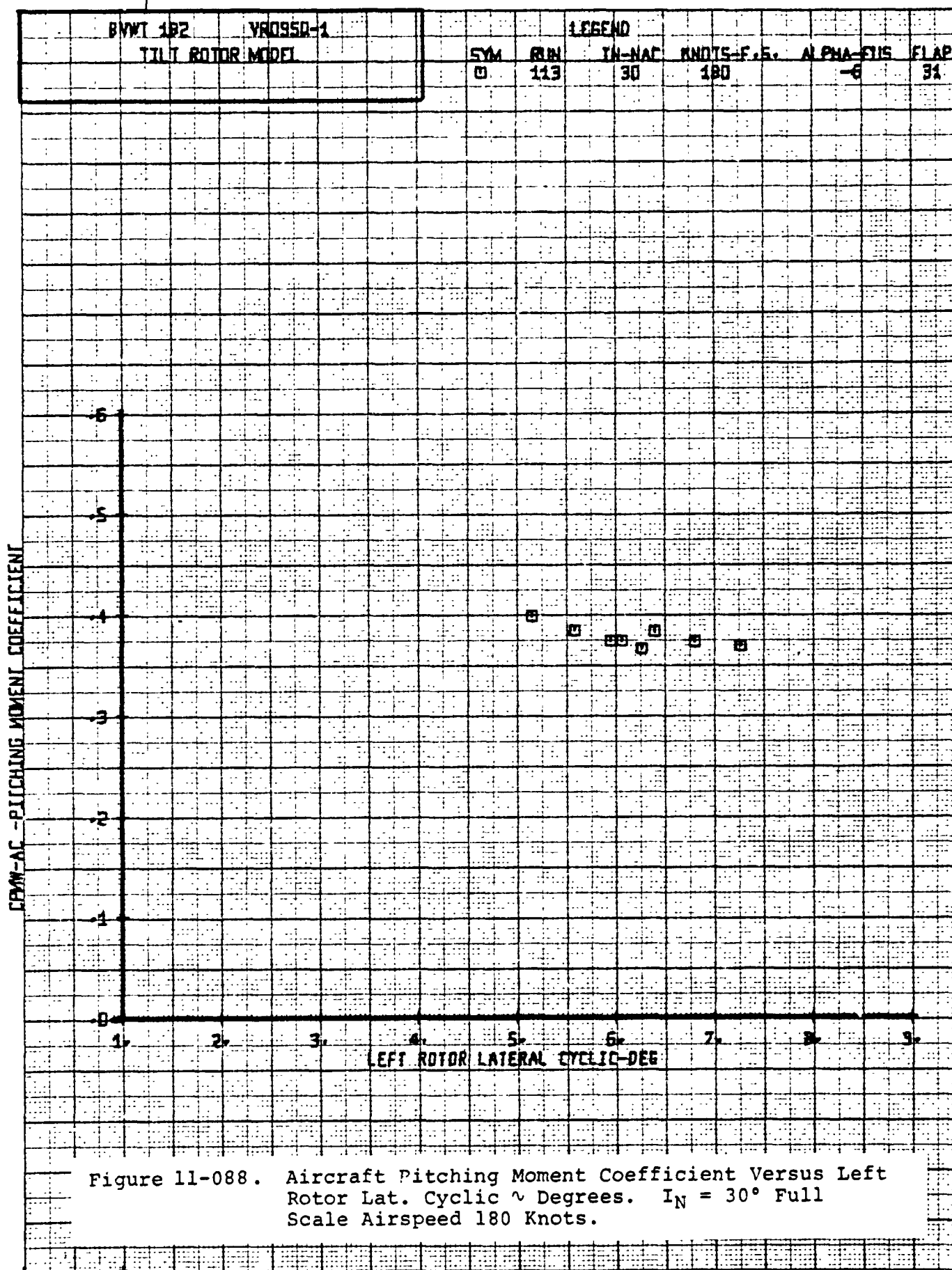
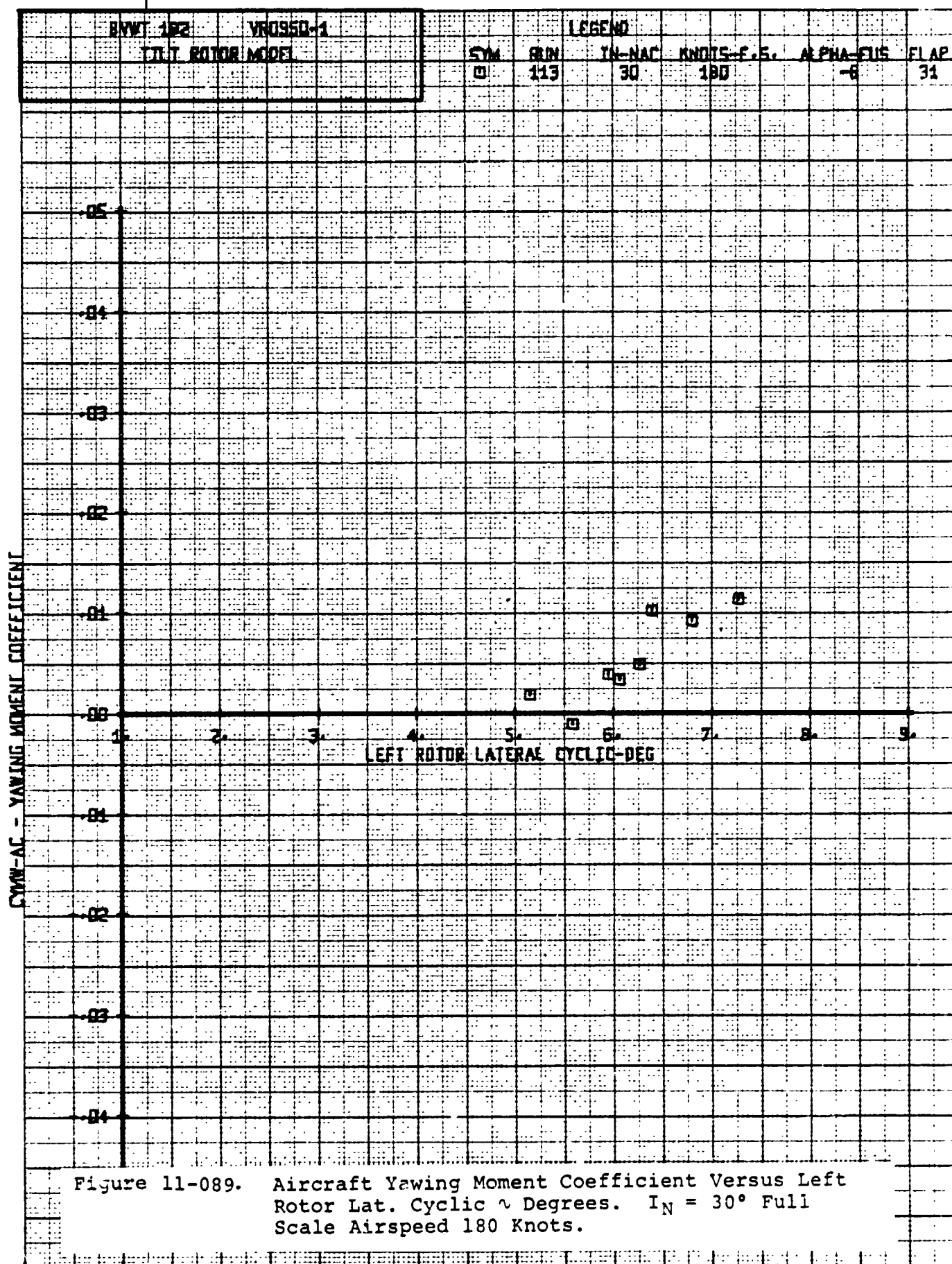
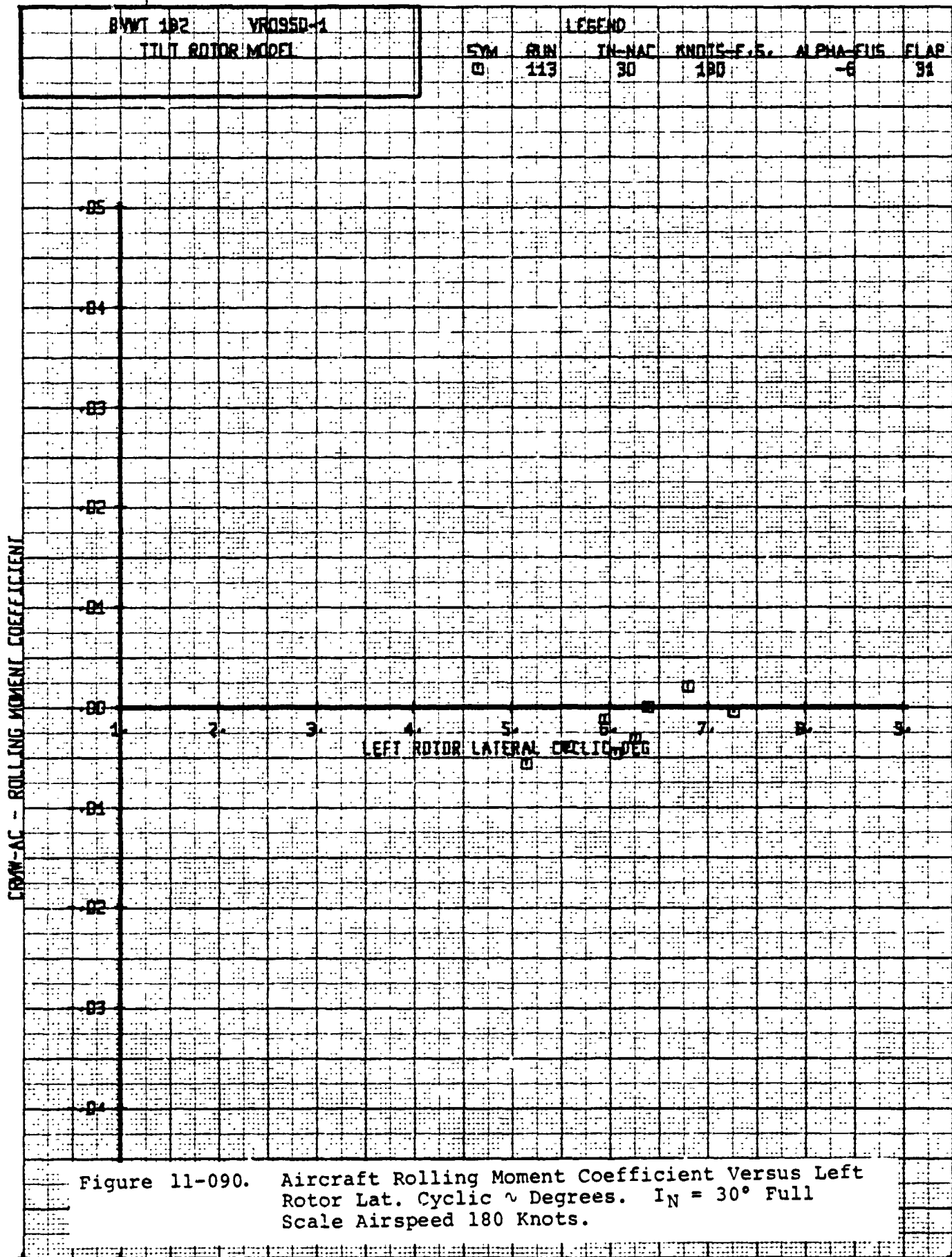


Figure 11-087. Aircraft Axial Force Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.







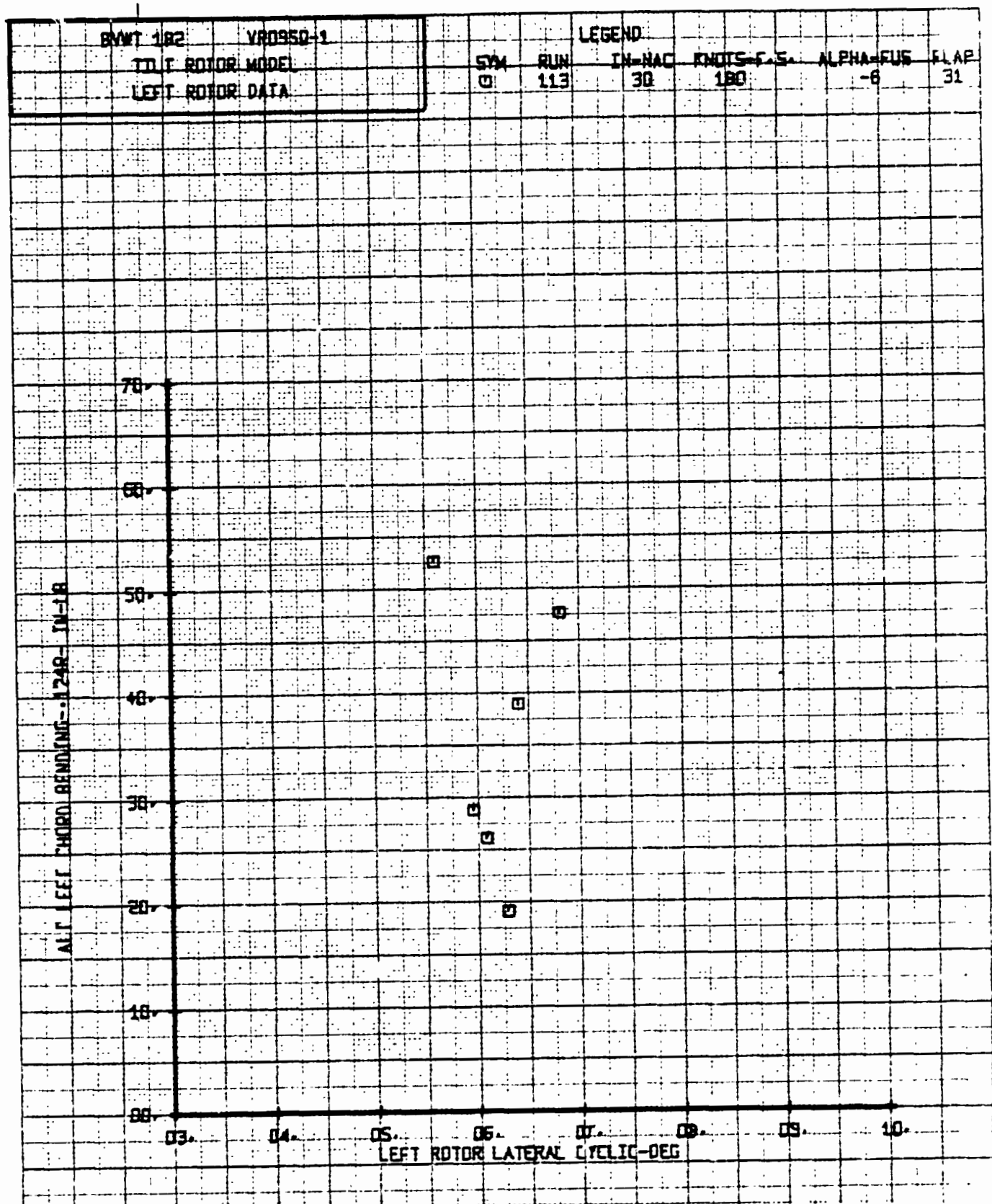
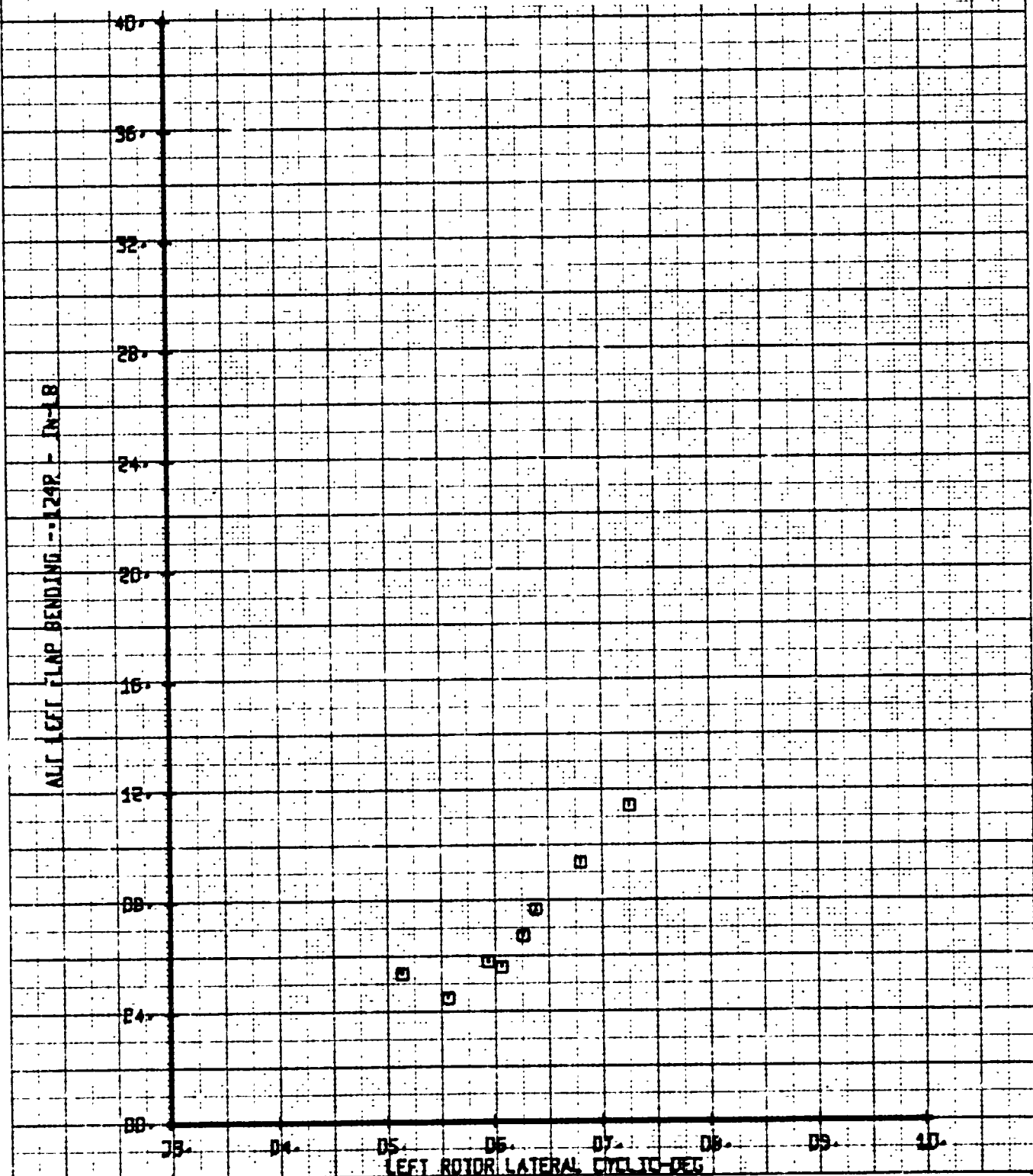


Figure 11-091. Alt. Left Chord Bending Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.

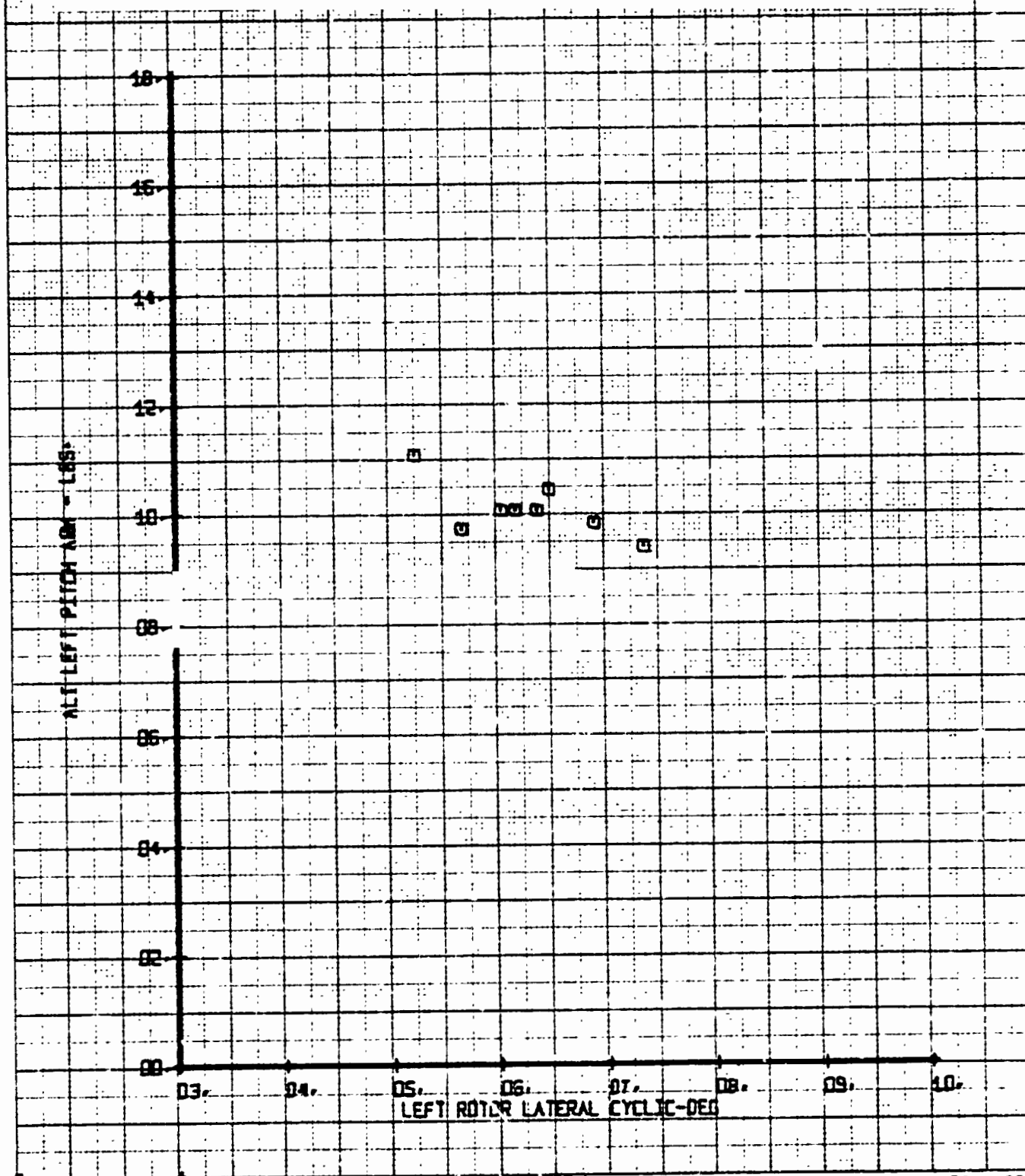
| | | | | | | |
|------------------|----------|--------|-----|---------|------------|-----------|
| BVWT 182 | YR0950-1 | LEGEND | | | | |
| TILT ROTOR MODEL | | SYM | RUN | IN. MAC | KNOTS-F.S. | ALPHA-DEG |
| LEFT ROTOR DATA | | □ | 113 | 30 | 180 | -8 |
| | | | | | | FLAP 31 |

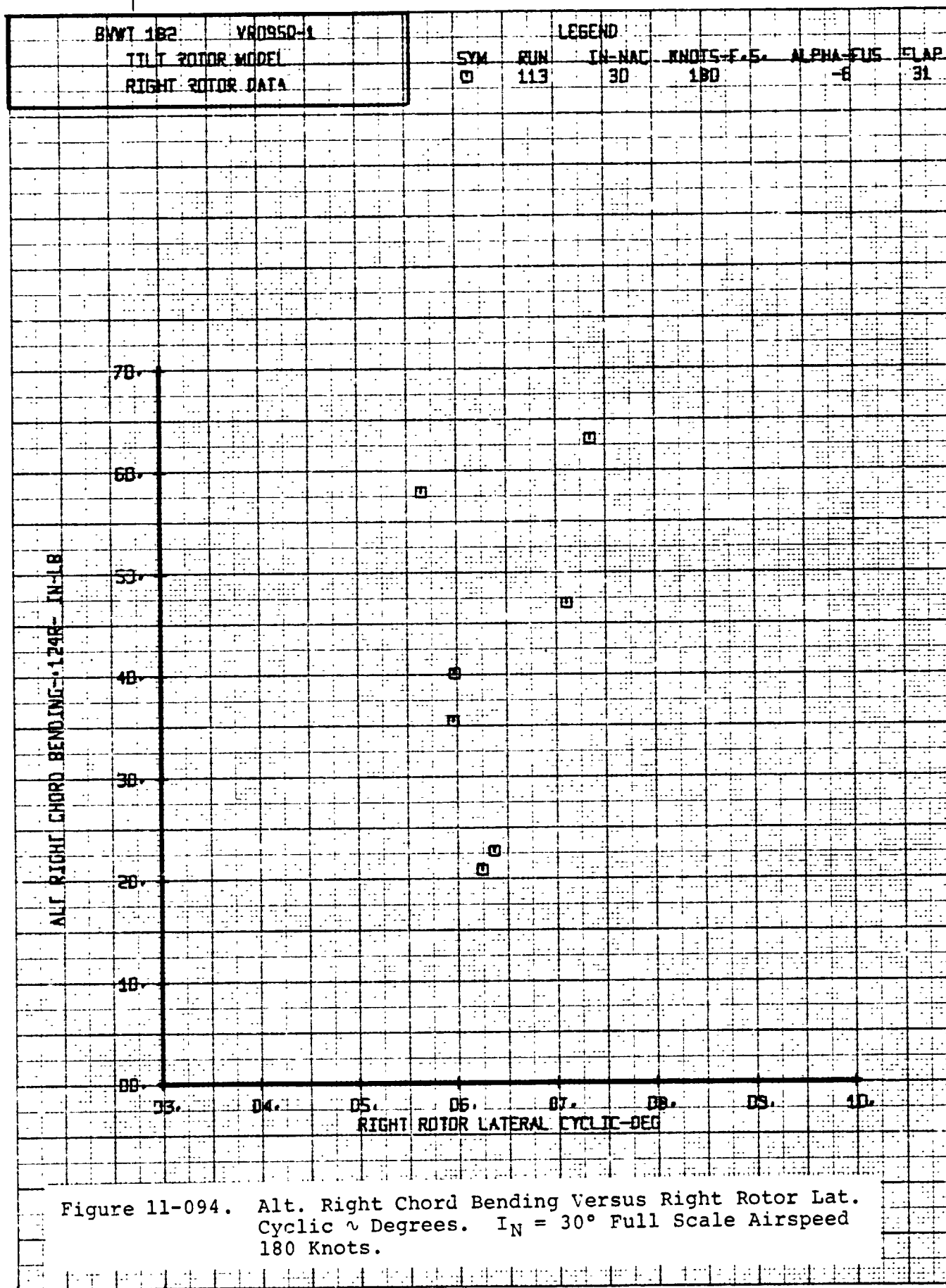
Figure 11-092. Alt. Left Flap Bending Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.



| | | | | | | |
|------------------|----------|--------|-----|-------|------------|-----------|
| BVWT 182 | YR0950-1 | LEGEND | | | | |
| TILT ROTOR MODEL | | SYM | RUN | IN-NA | KNOTS-F.S. | ALPHA-FUS |
| LEFT ROTOR DATA | | □ | 118 | 30 | 180 | -6 |
| | | | | | | FLAP 31 |

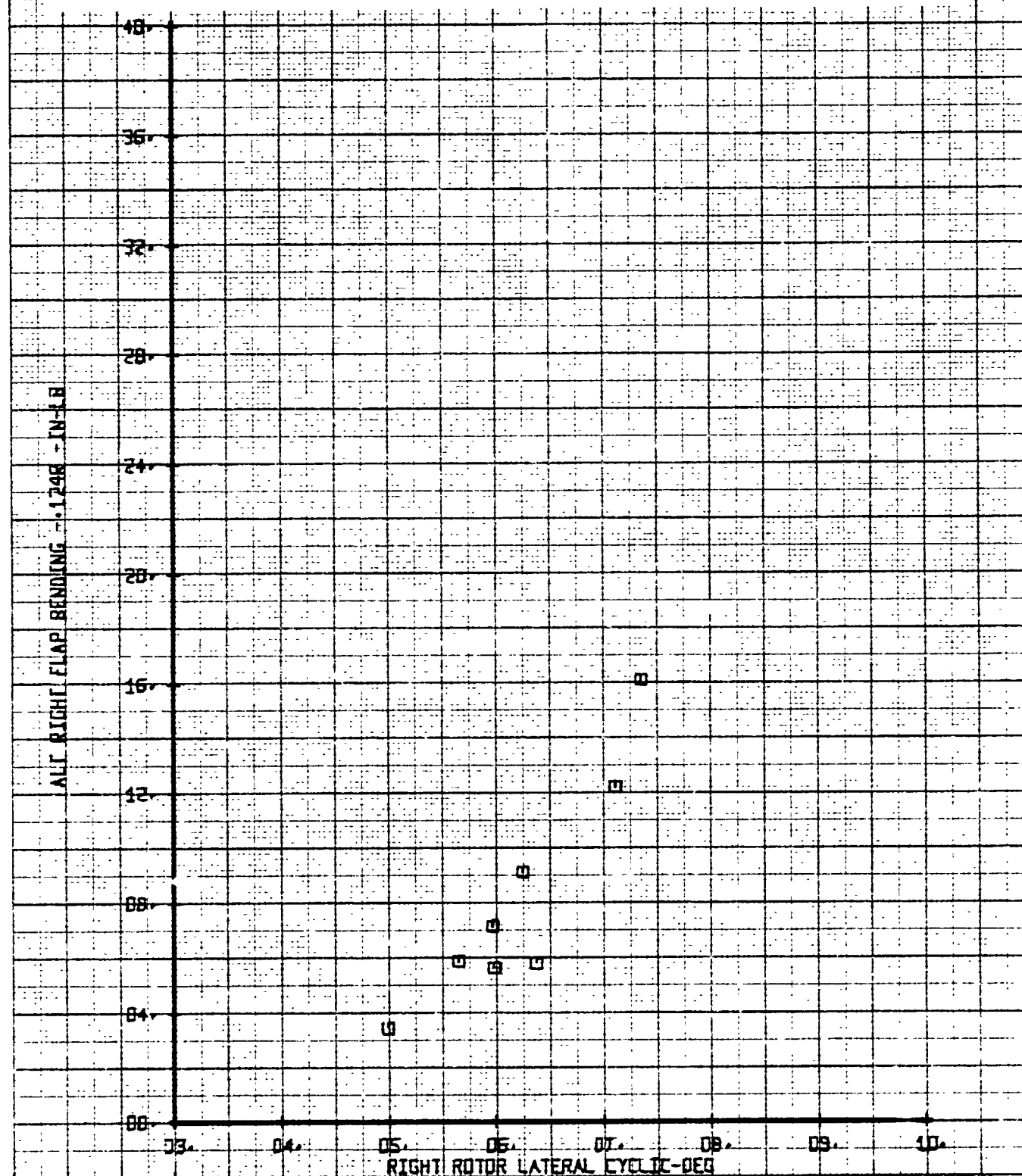
Figure 11-093. Alt. Left Pitch Link Load Versus Left Rotor Lat. Cyclic α Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.





| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | VR0950-1 | LEGEND | | | | |
| TILT ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FUS |
| RIGHT ROTOR DATA | | □ | 113 | 30 | 180 | -6 |
| | | | | | | 31 |

Figure 11-095. Alt. Right Flap Bending Versus Right Rotor Lat. Cyclic ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.



BVWT 182 YR0950-1

TILT ROTOR MODEL

RIGHT ROTOR DATA

SYM

RIN

FGENO

IN-NAC

KNOTS-F.S.

ALPHA-FUS

FLAP

0

113

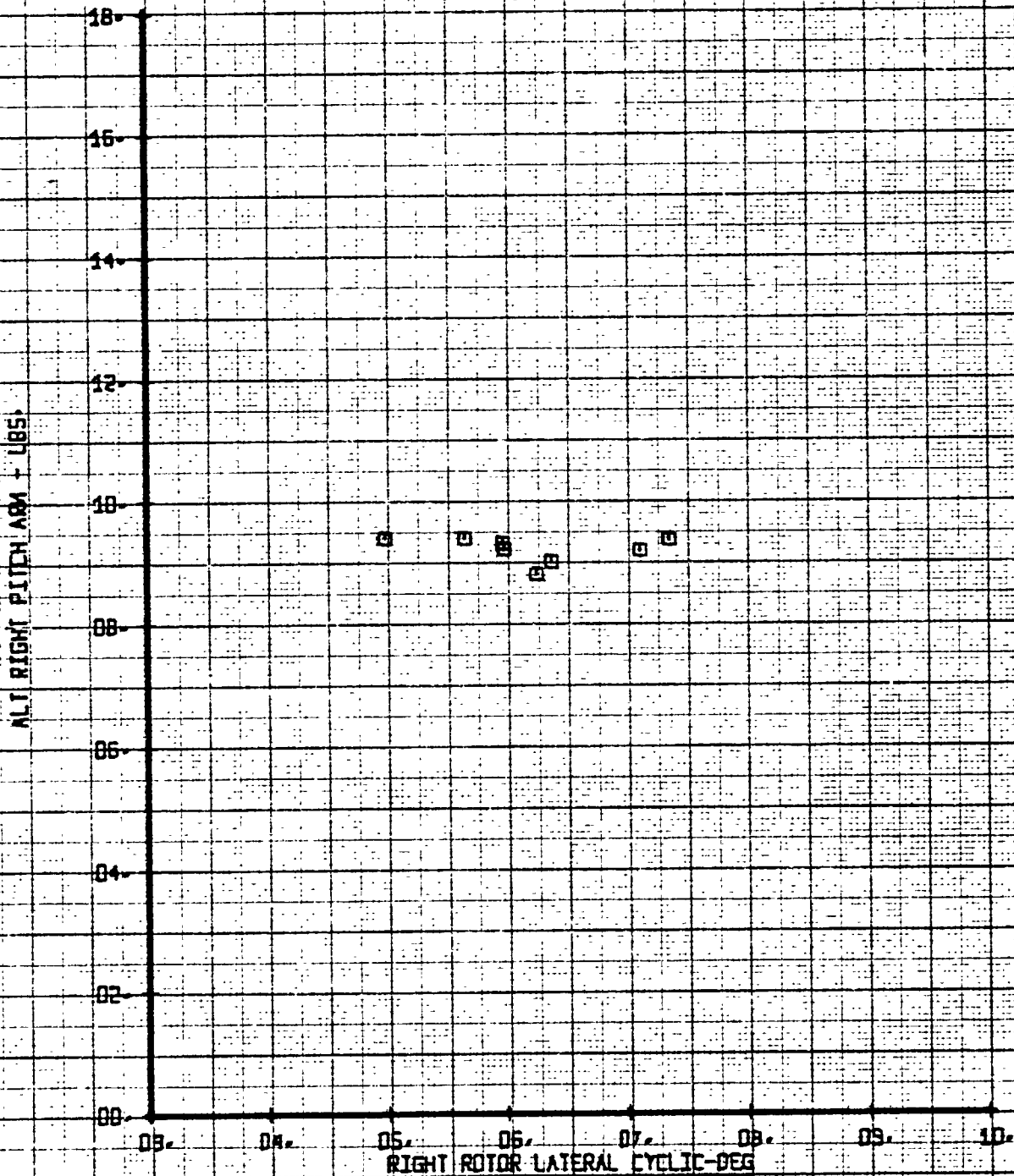
30

180

-6

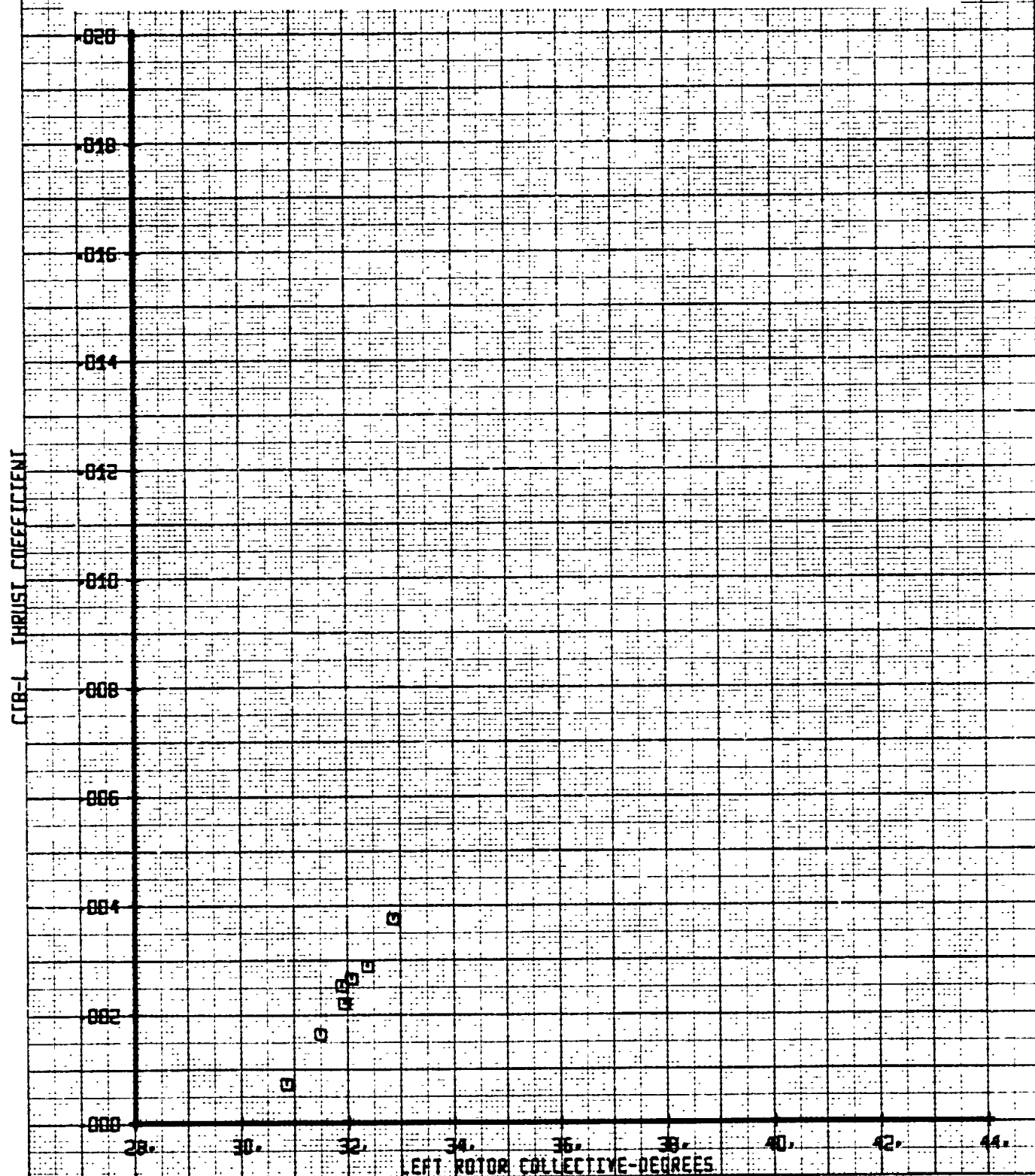
31

Figure 11-096. Alt. Right Pitch Link Load Versus Right Rotor
Lat. Cyclic α Degrees. $I_N = 30^\circ$ Full Scale
Airspeed 180 Knots.



| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | VR0950-1 | LEGEND | | | | |
| LEFT ROTOR MODEL | | SW | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FLG |
| LEFT ROTOR DATA | | 0 | 115 | 30 | 180 | -5 |
| | | | | | | 31 |

Figure 11-097. Left Rotor Thrust Coefficient Versus Left Rotor Collective γ Degrees. $I_N = 30^\circ$ Full Scale
Airspeed 180 Knots.



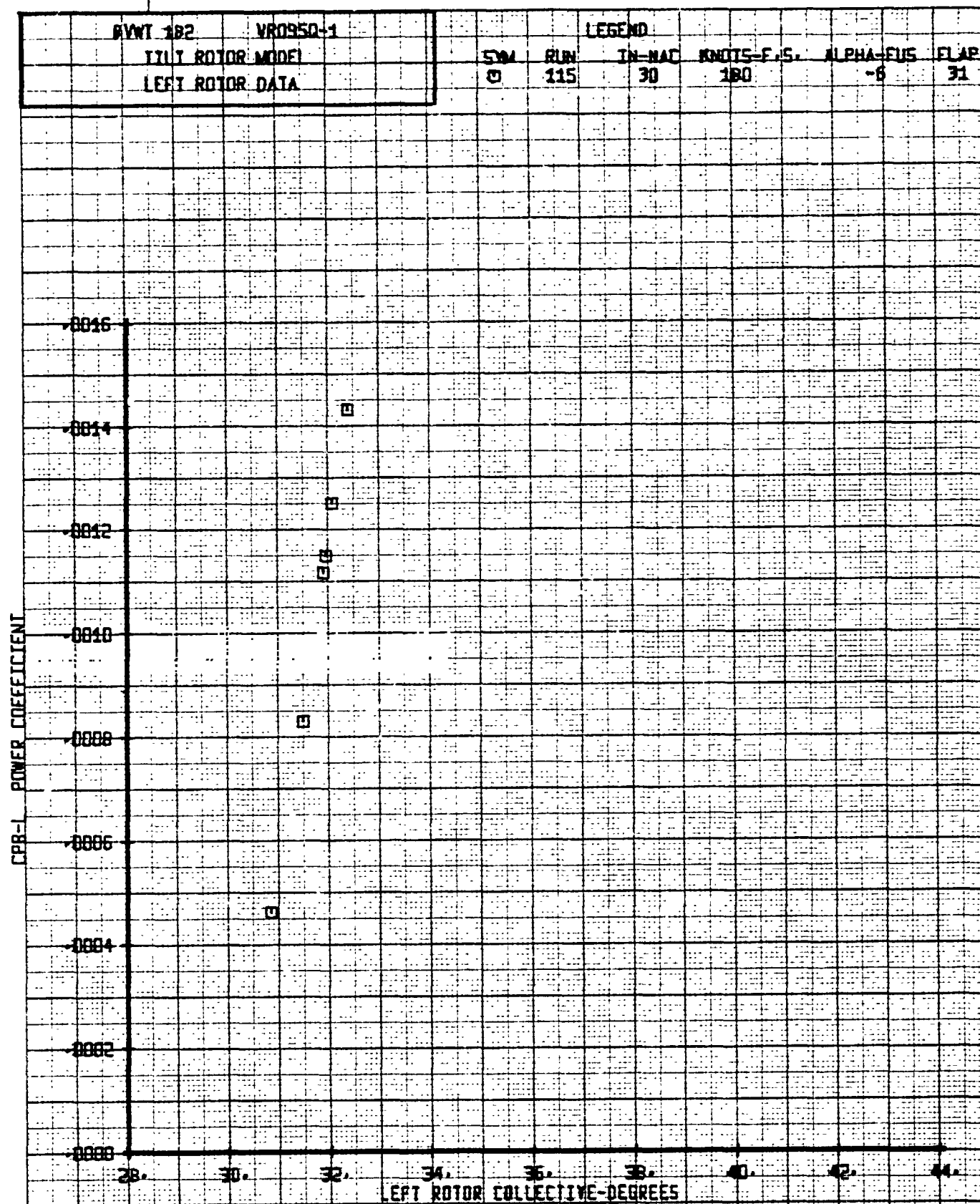


Figure 11-098. Left Rotor Power Coefficient Versus Left Rotor Collective ~ Degrees. $I_N = 30^\circ$ Full Scale
Airspeed 180 Knots.

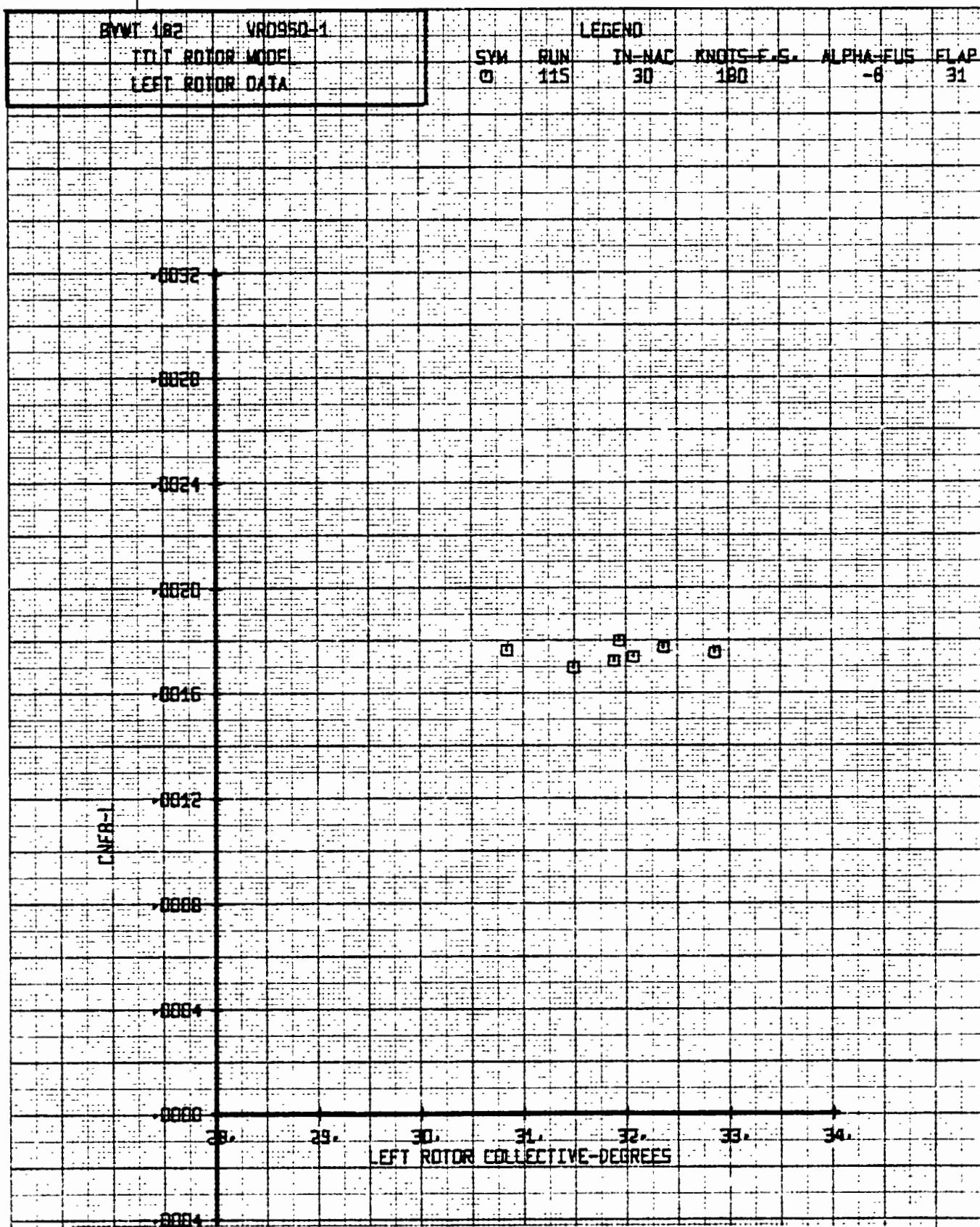
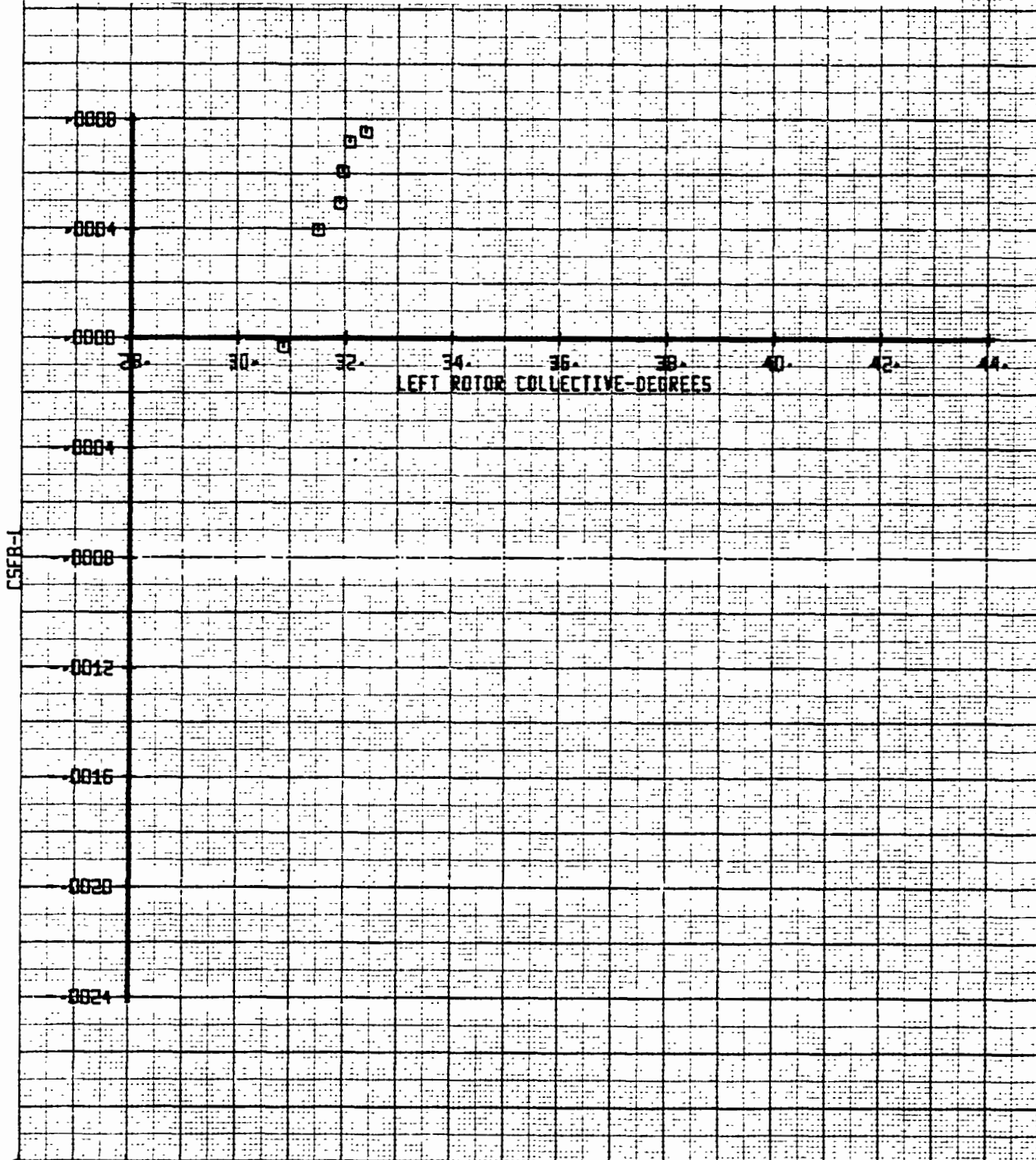
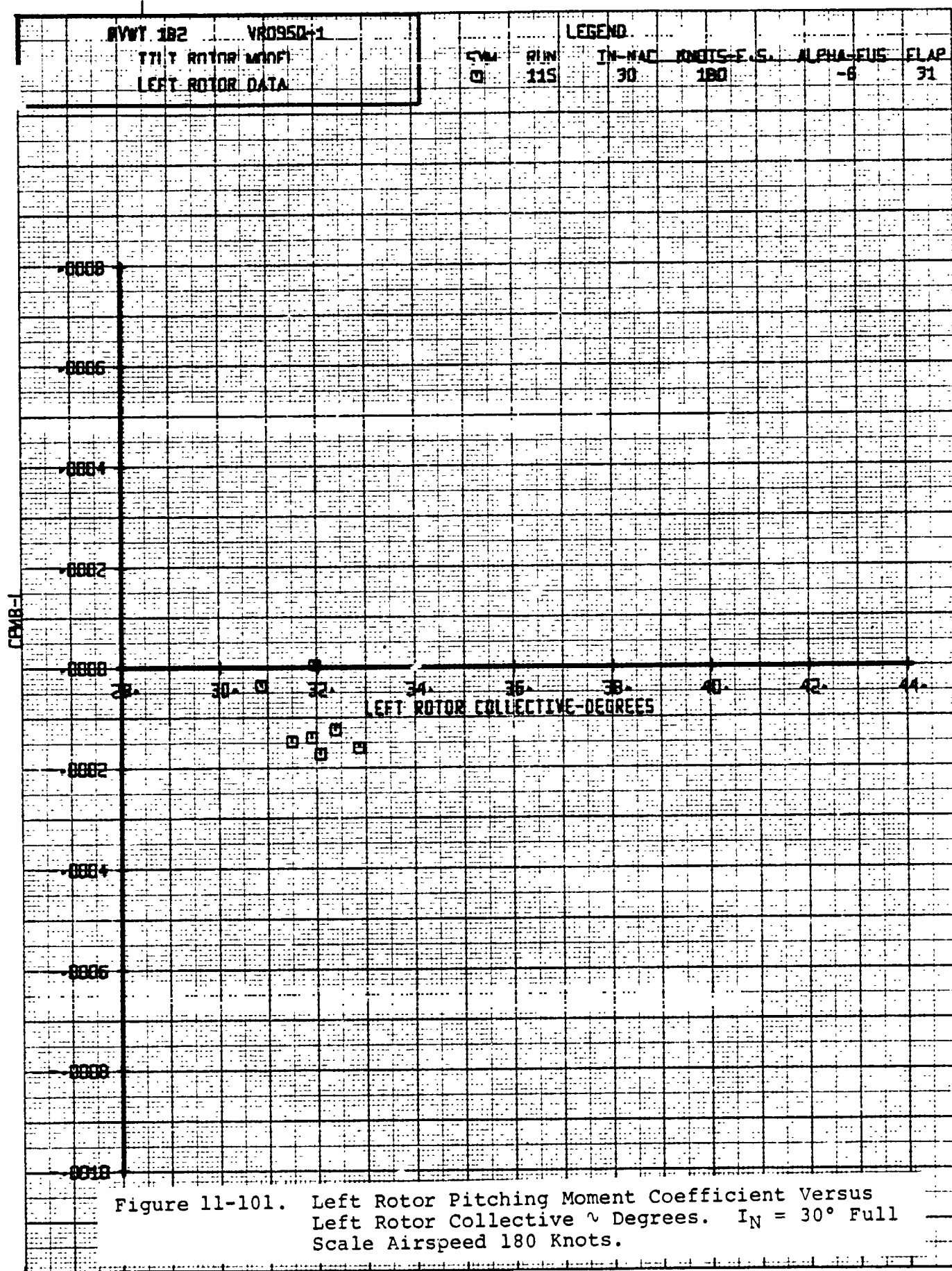


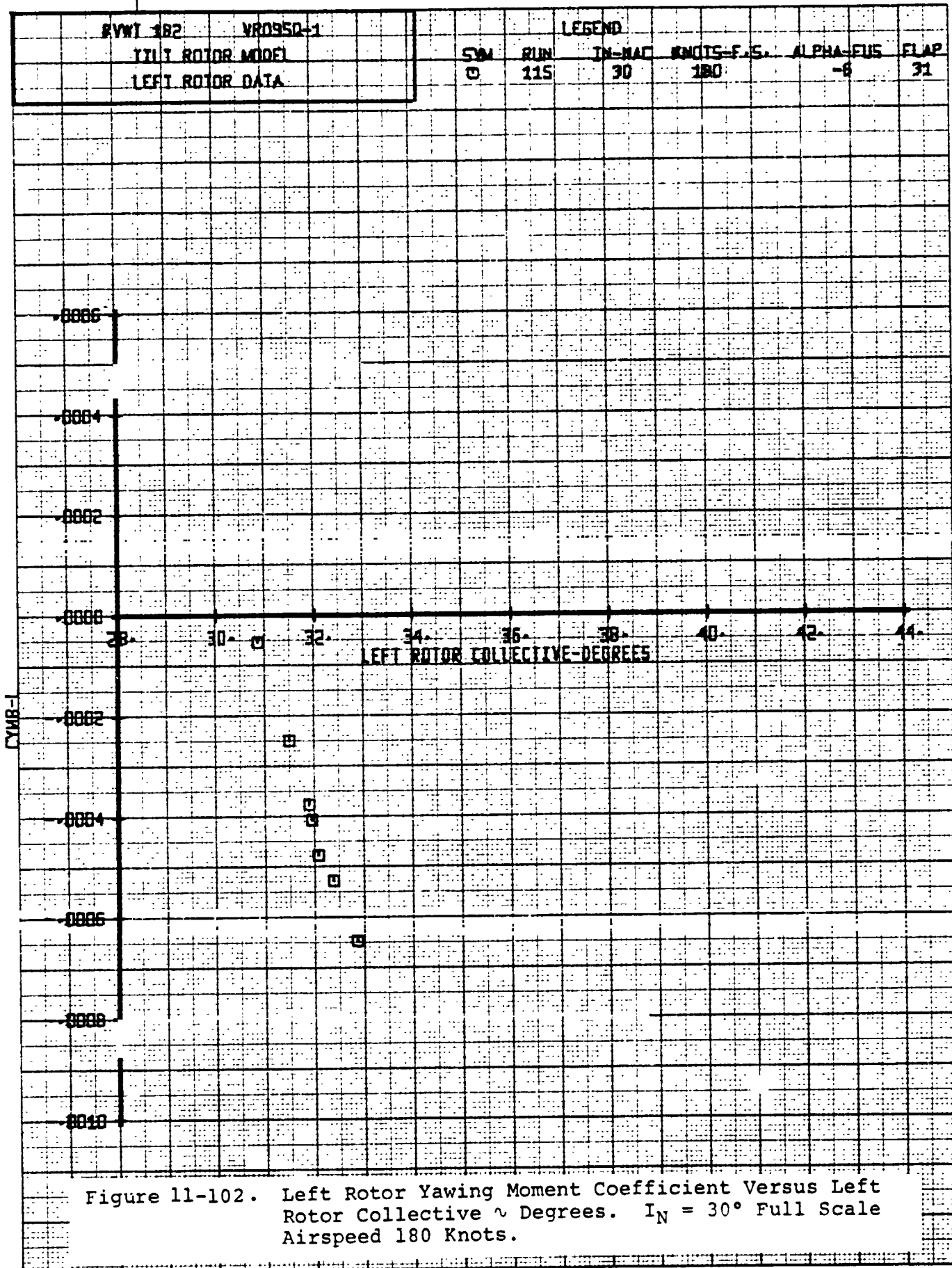
Figure 11-099. Left Rotor Normal Force Coefficient Versus Left Rotor Collective ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.

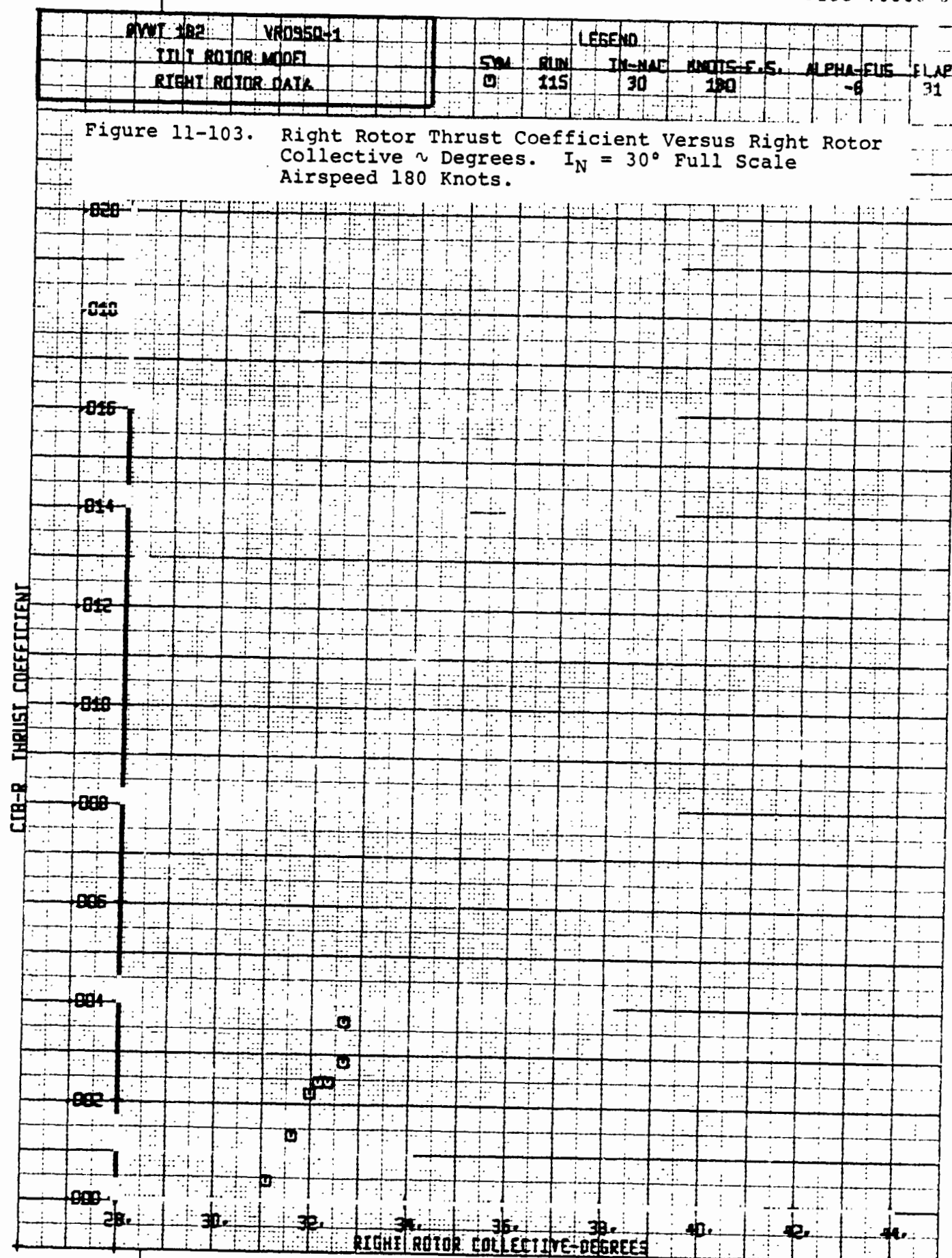
| | | | | | | | | | |
|------------------|--|----------|--|--------|-----|--------|------------|-----------|------|
| BVWT 182 | | VR0950-1 | | LEGEND | | | | | |
| LEFT ROTOR MODEL | | | | SM | RUN | IN-MAC | KNOTS-F.S. | ALPHA-FUS | FLAP |
| LEFT ROTOR DATA | | | | 0 | 115 | 30 | 180 | -6 | 31 |

Figure 11-100. Left Rotor Side Force Coefficient Versus Left Rotor Collective ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.









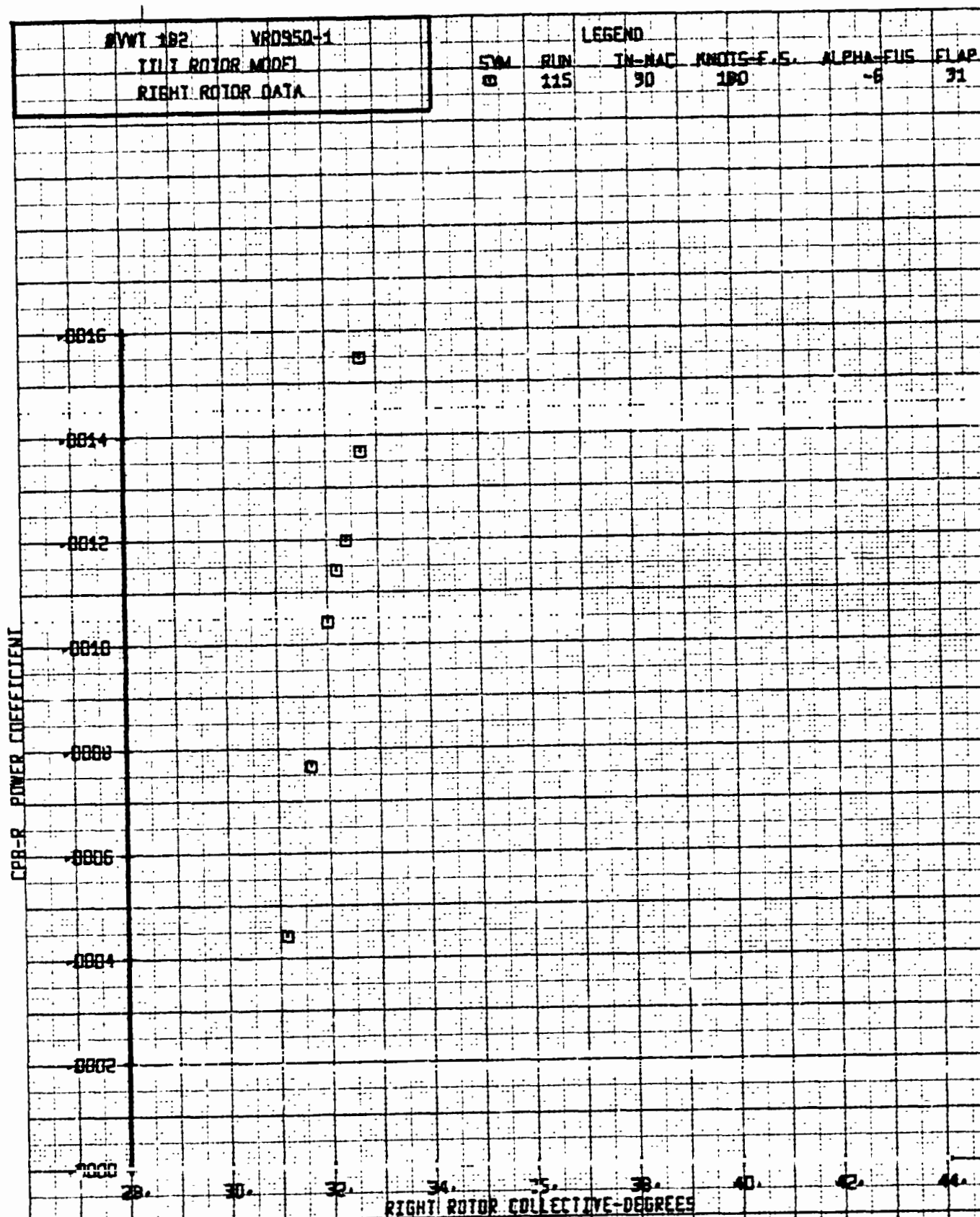
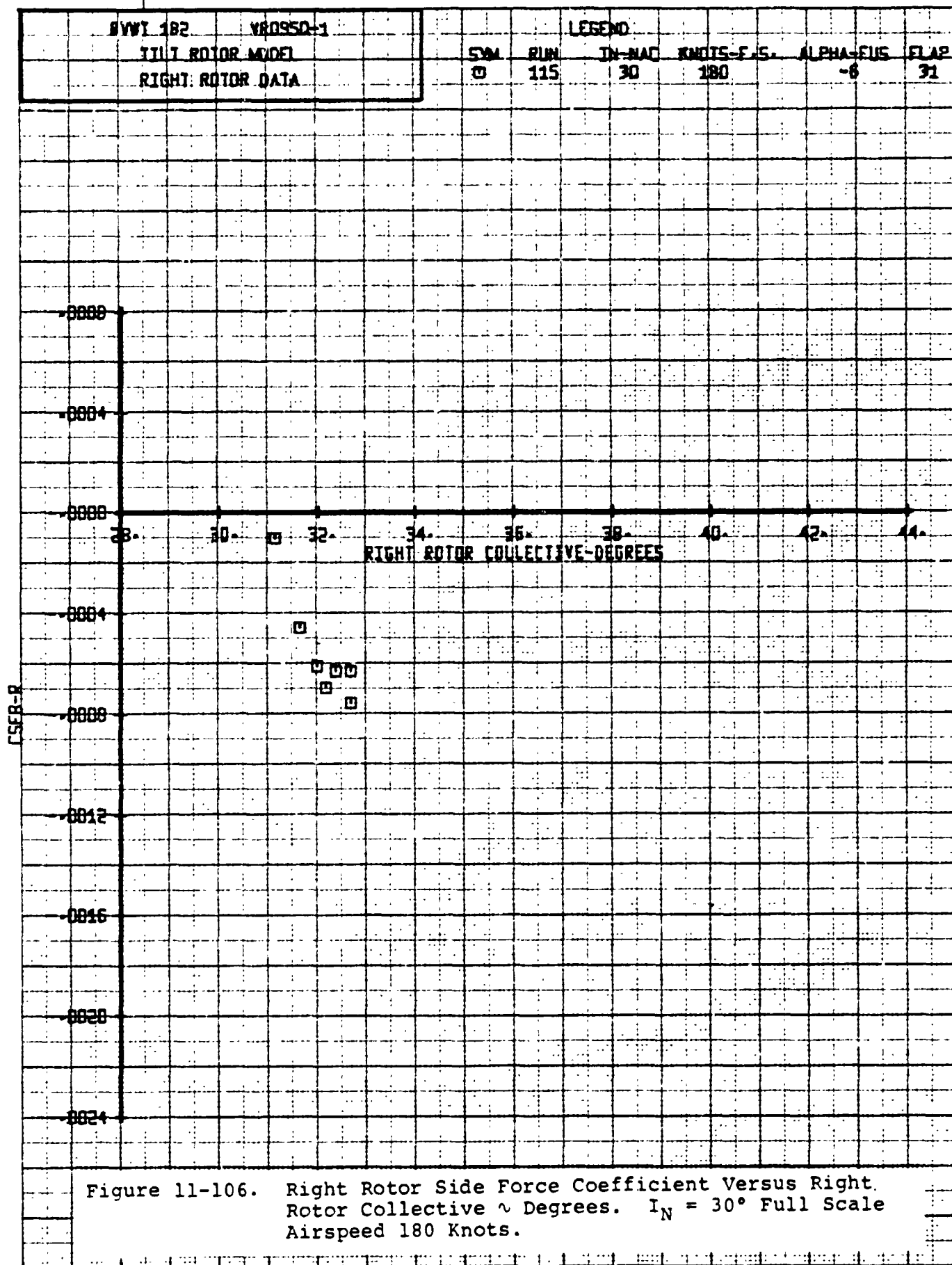
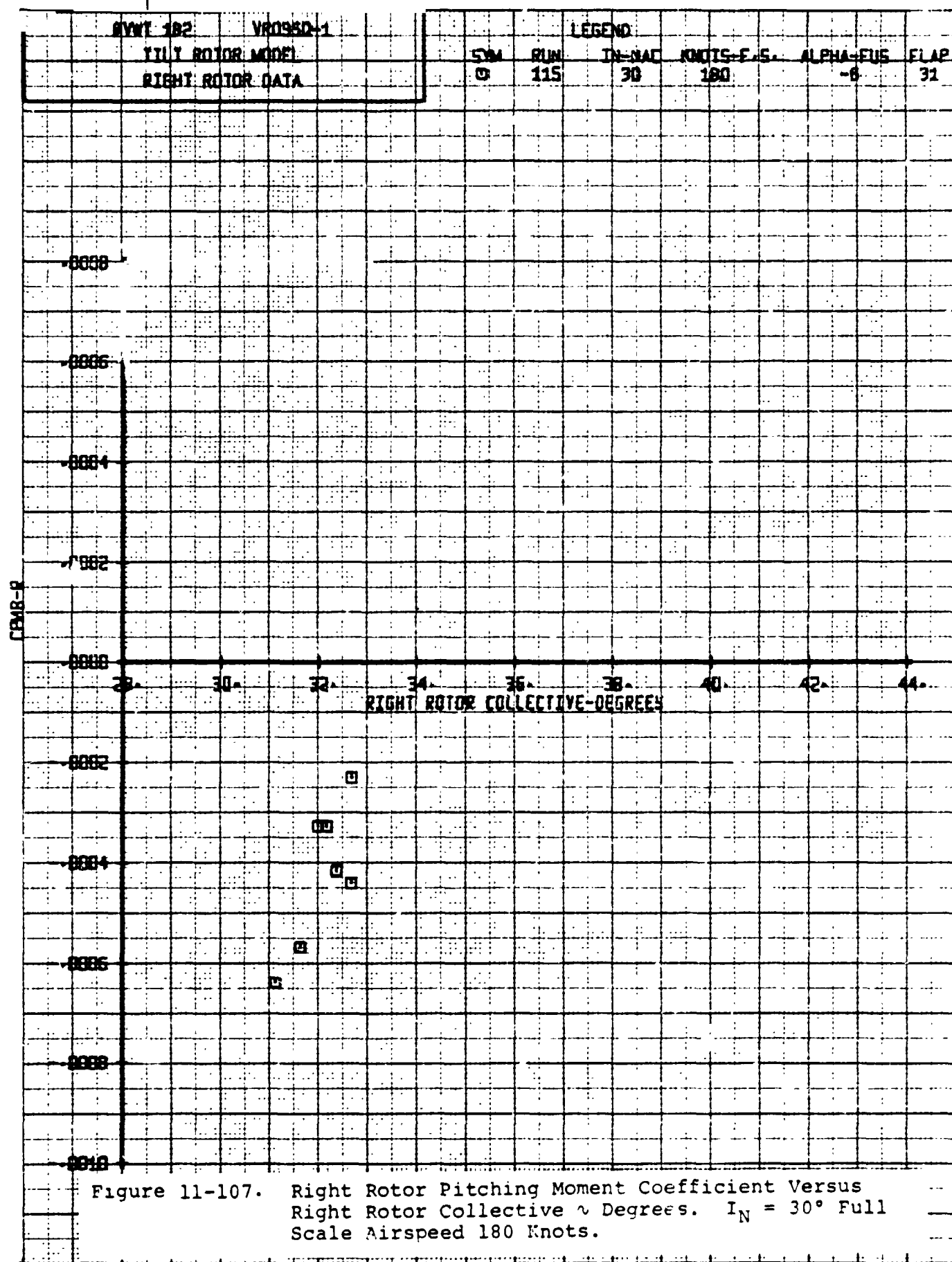
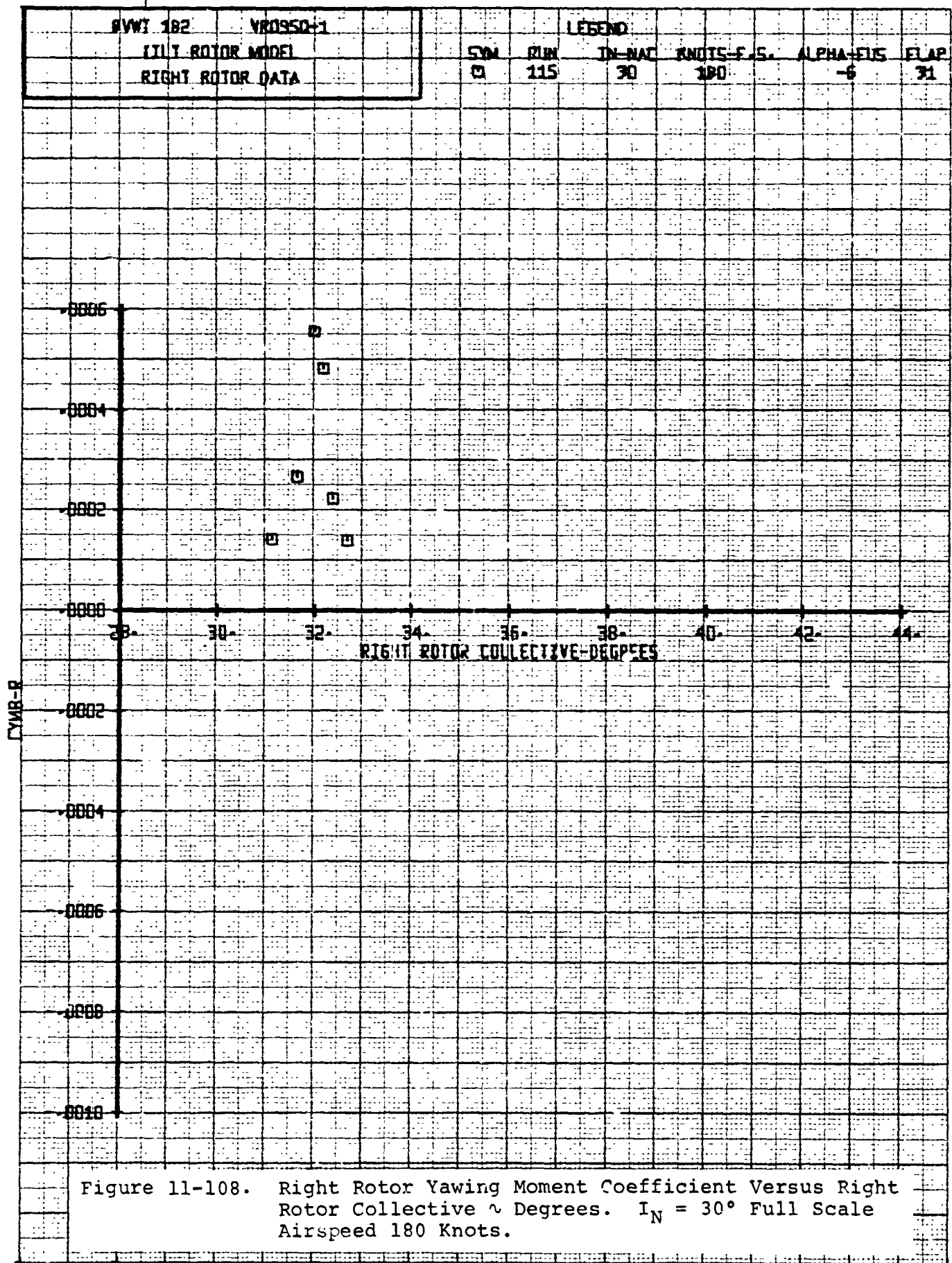


Figure 11-104. Right Rotor Power Coefficient Versus Right Rotor Collective ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.

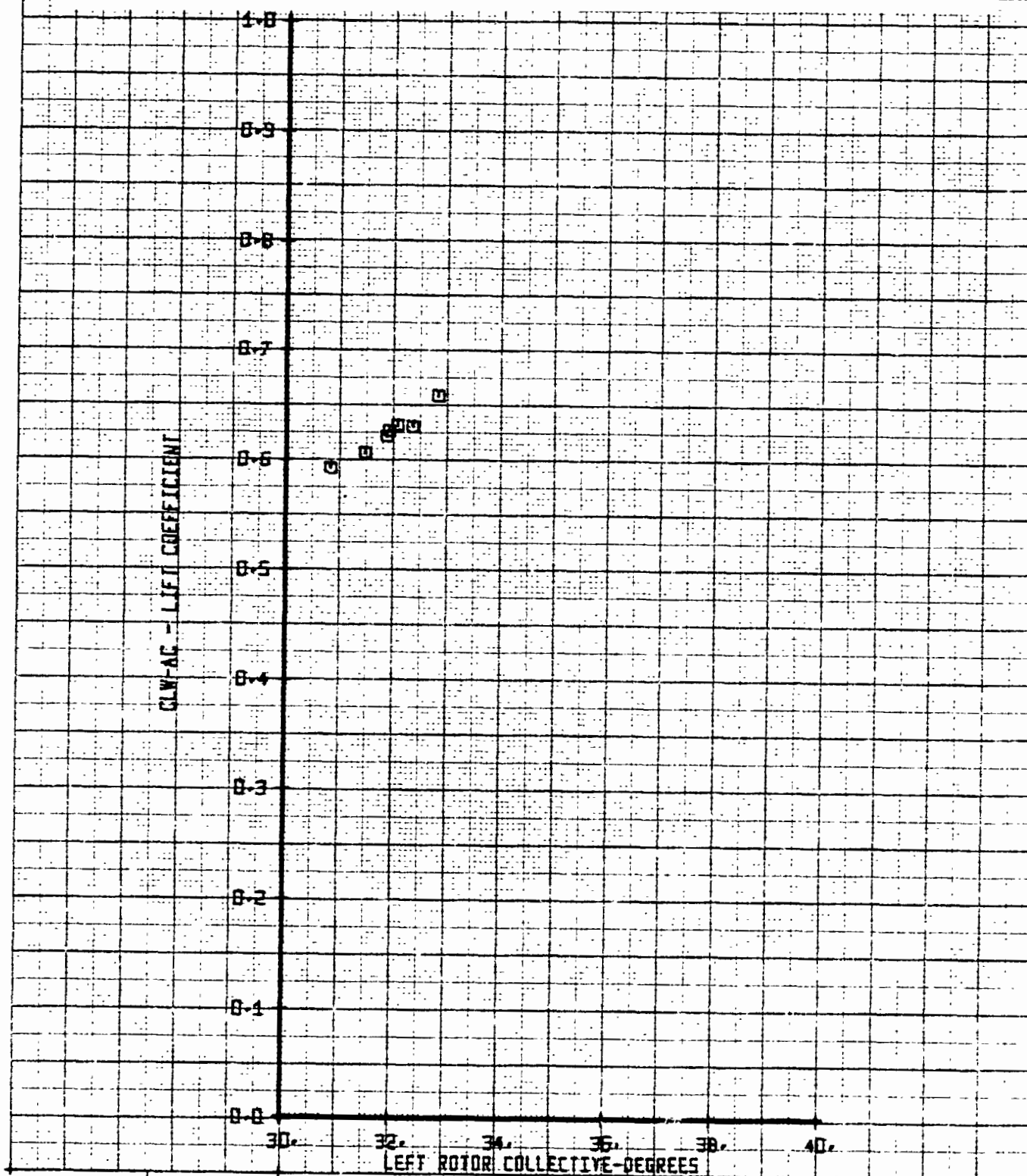


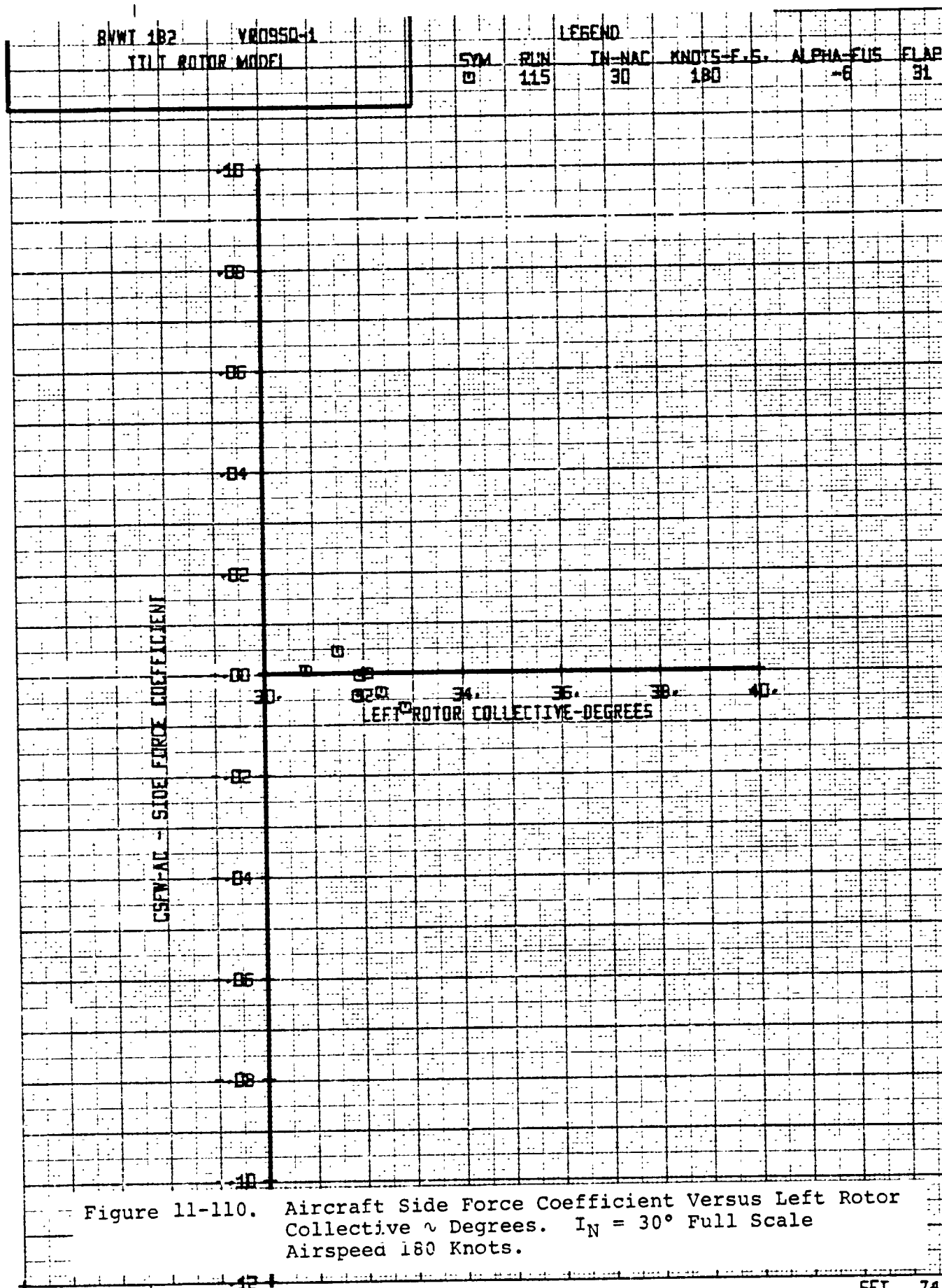




| | | | | | | |
|------------------|----------|--------|-----|--------|--------------|-----------|
| BYWT 182 | Y80950-1 | LEGEND | | | | |
| TILT ROTOR MODEL | | SYM | MIN | IN-NAC | KNOTS-F.F.S. | ALPHA-FUS |
| | | □ | 115 | 30 | 180 | -8 |
| | | | | | | FLAP 31 |

Figure 11-109. Aircraft Lift Coefficient Versus Left Rotor Collective α Degrees. $I_N = 30^\circ$ Full Scale
Airspeed 180 Knots.





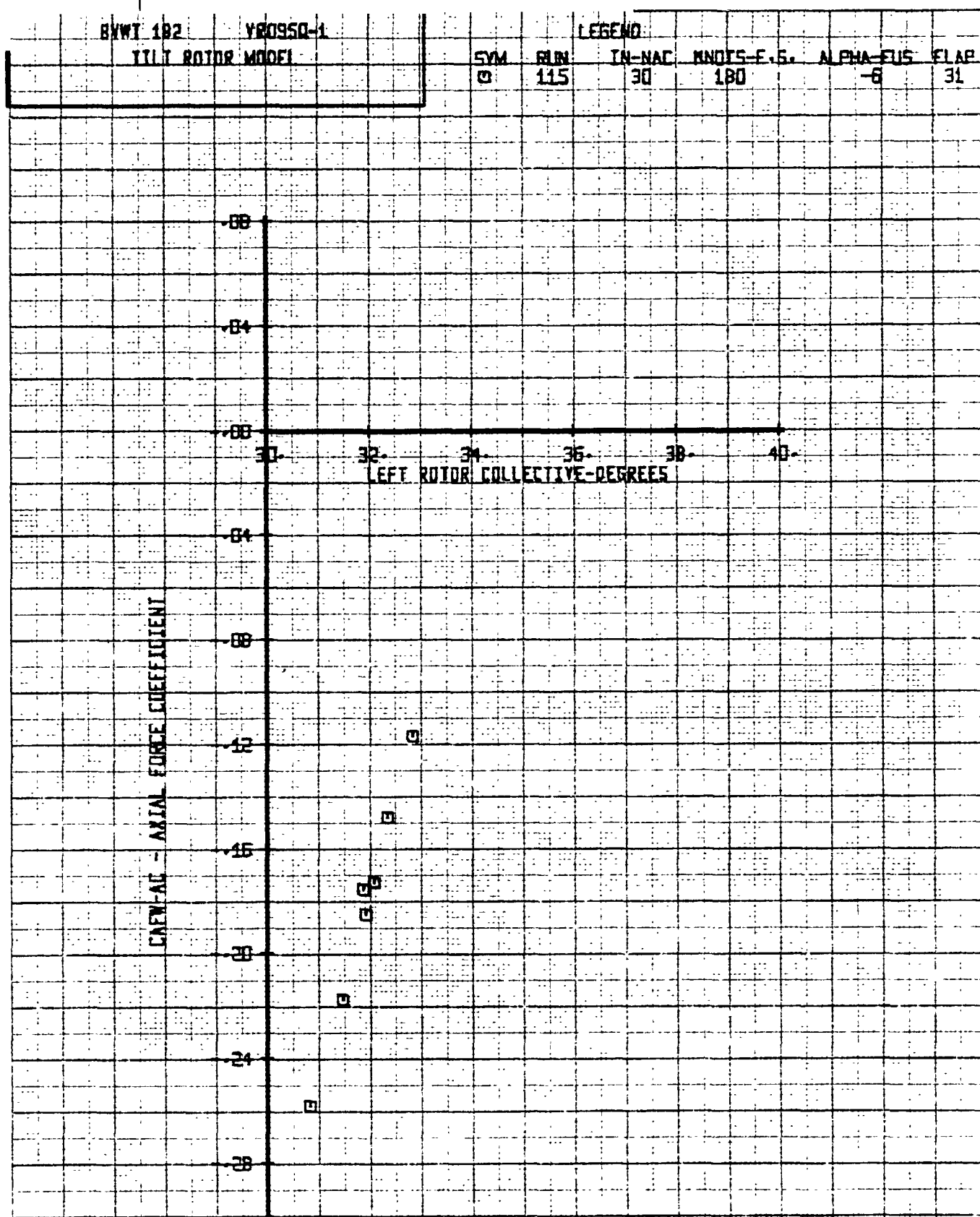


Figure 11-111. Aircraft Axial Force Coefficient Versus Left Rotor Collective ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.

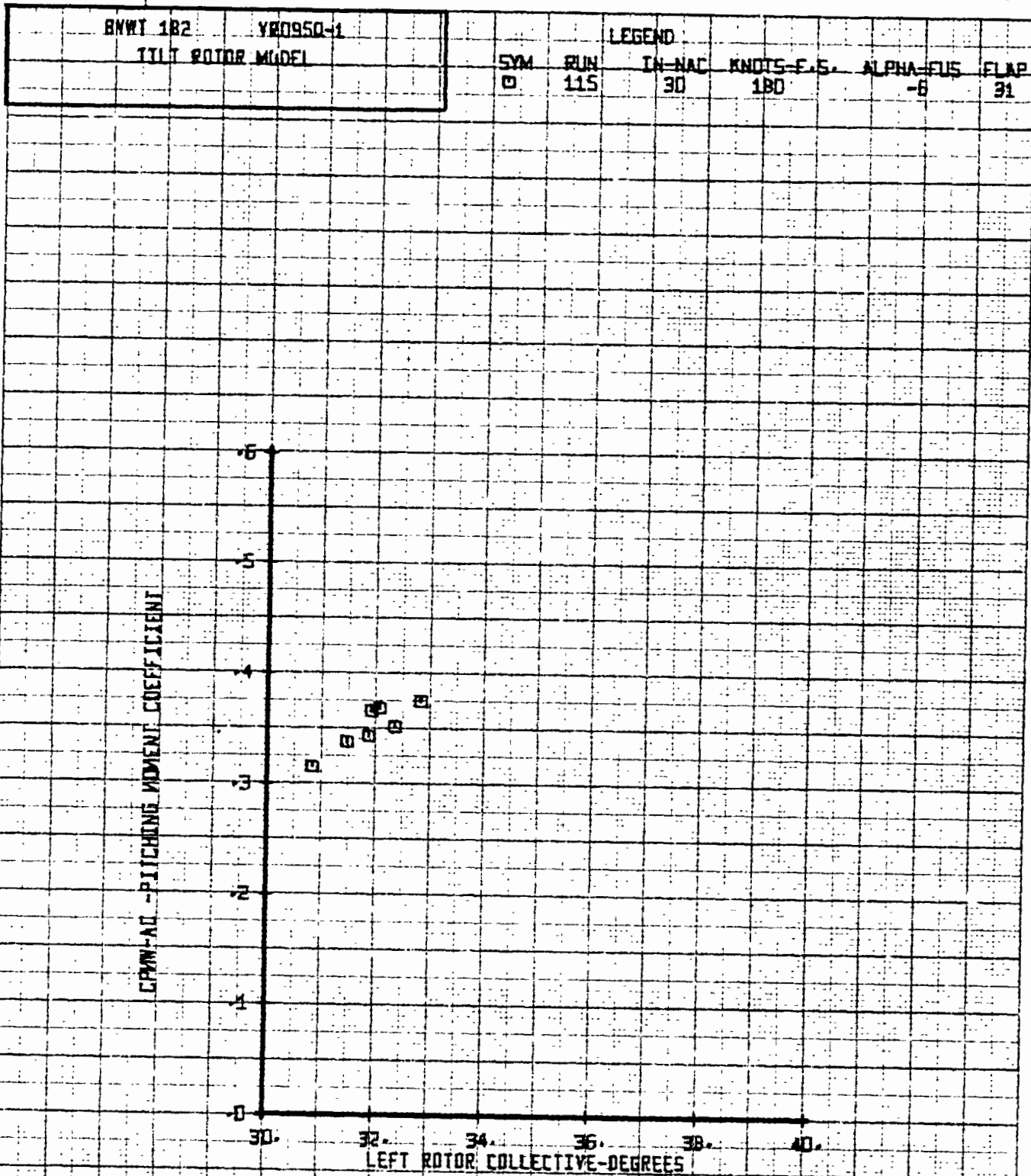


Figure 11-112. Aircraft Pitching Moment Coefficient Versus Left Rotor Collective ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.

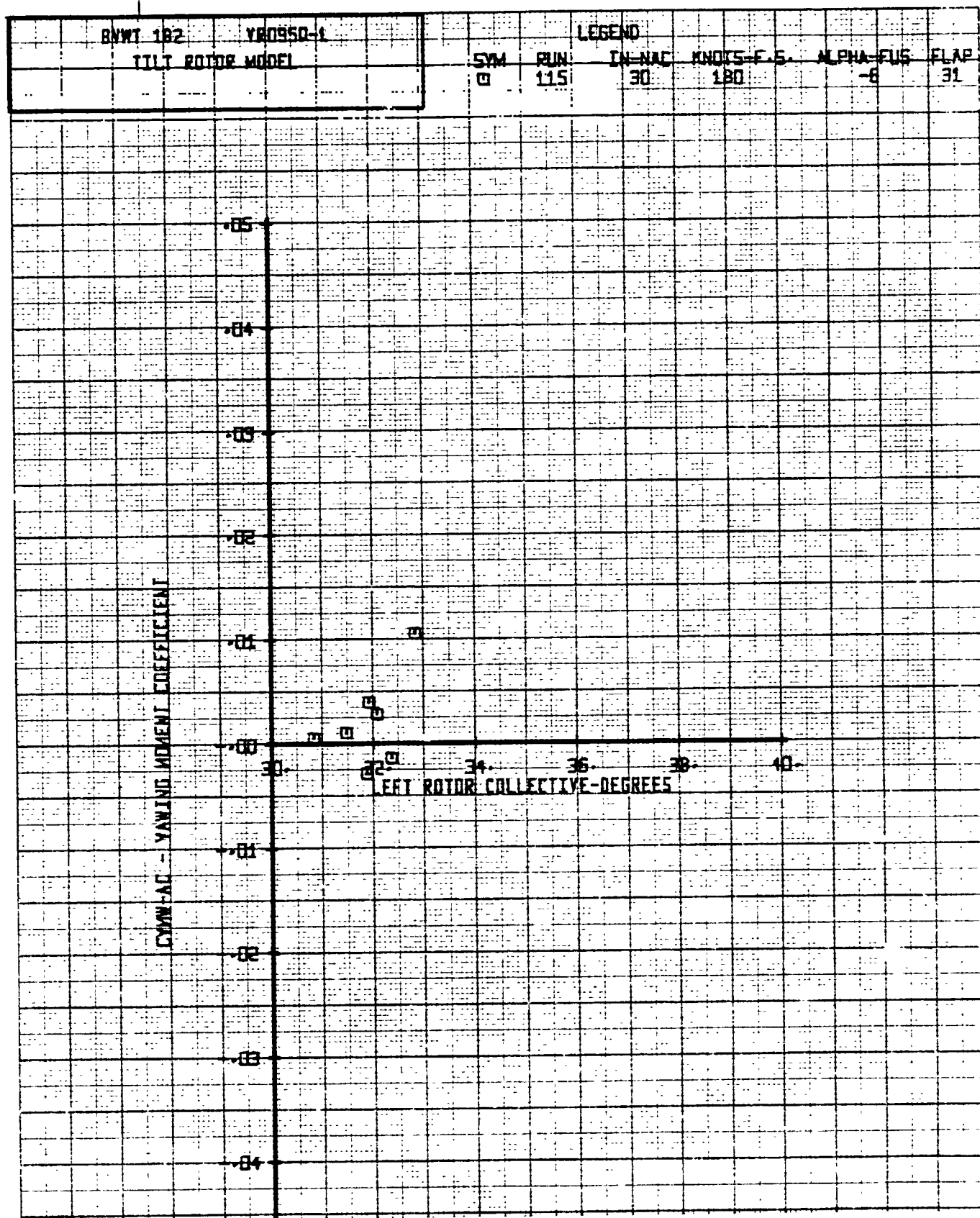
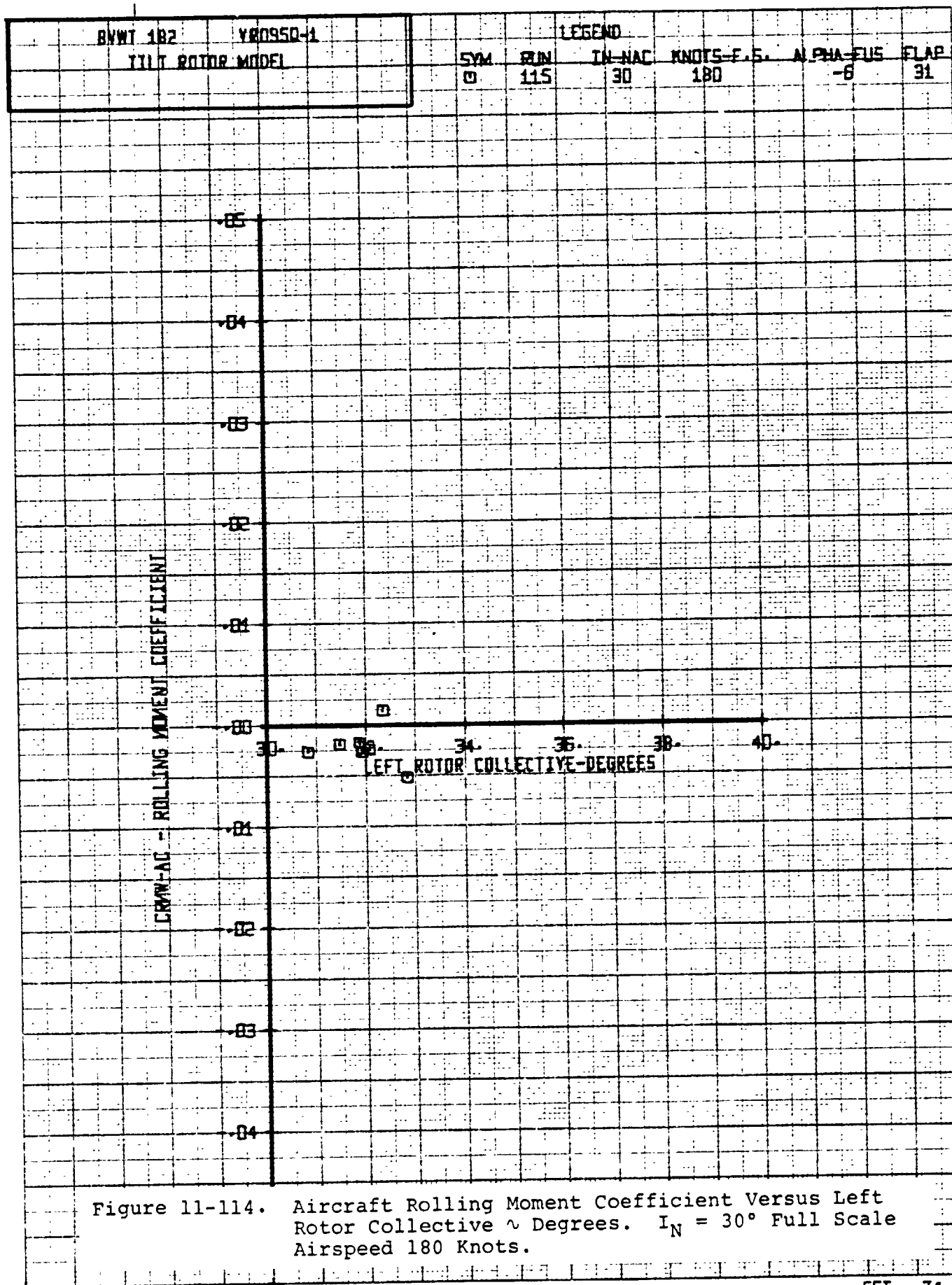
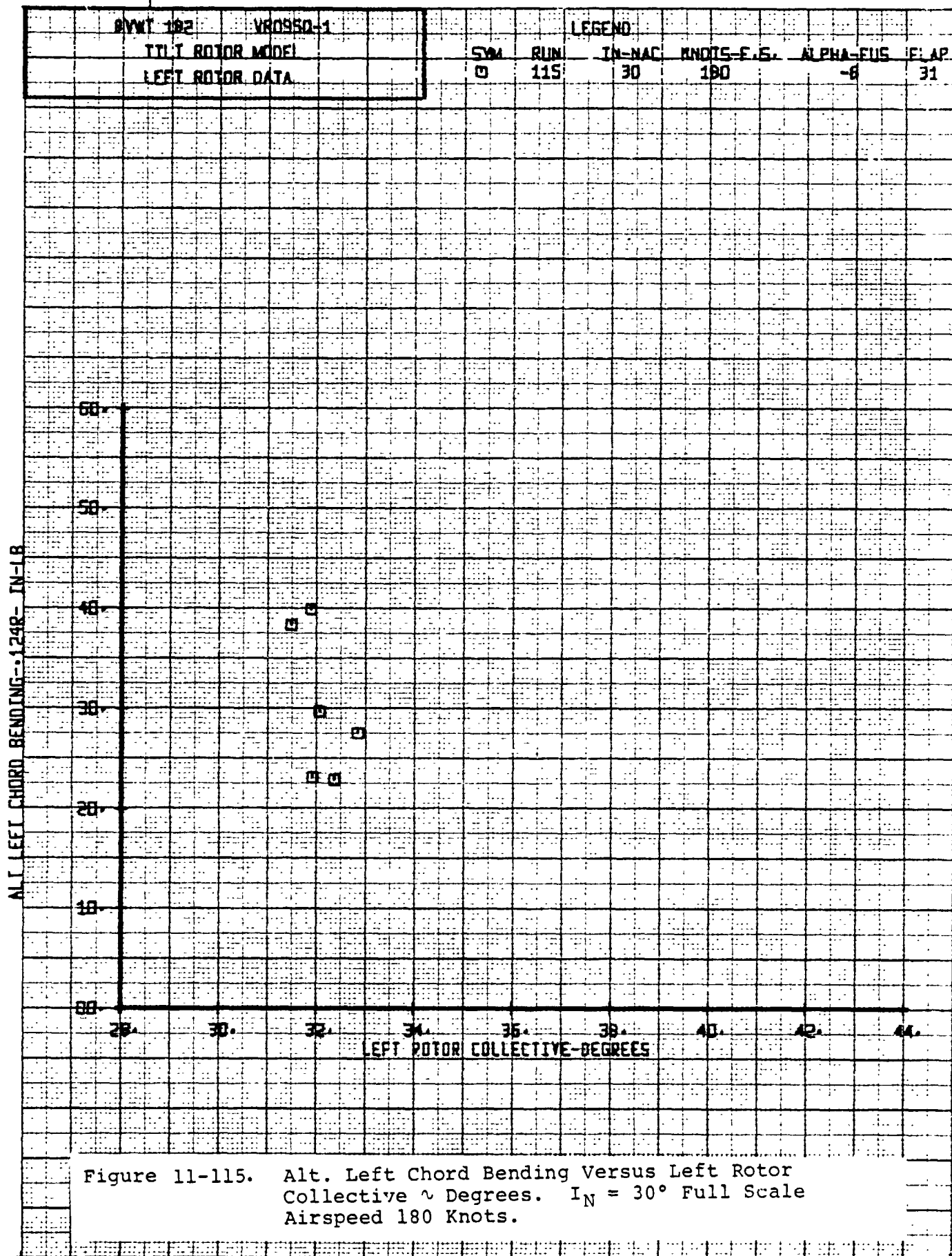
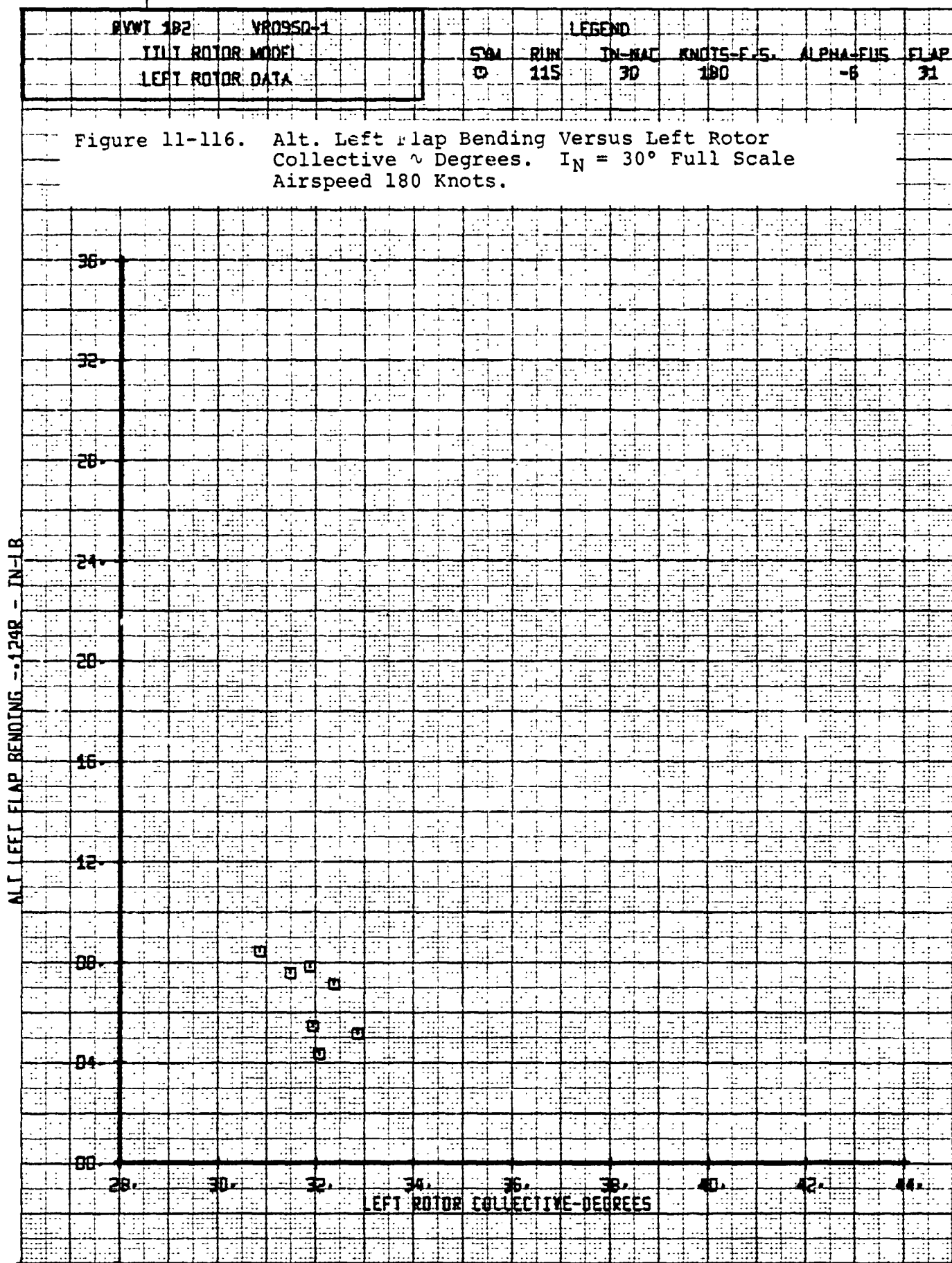


Figure 11-113. Aircraft Yawing Moment Coefficient Versus Left Rotor Collective α Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.

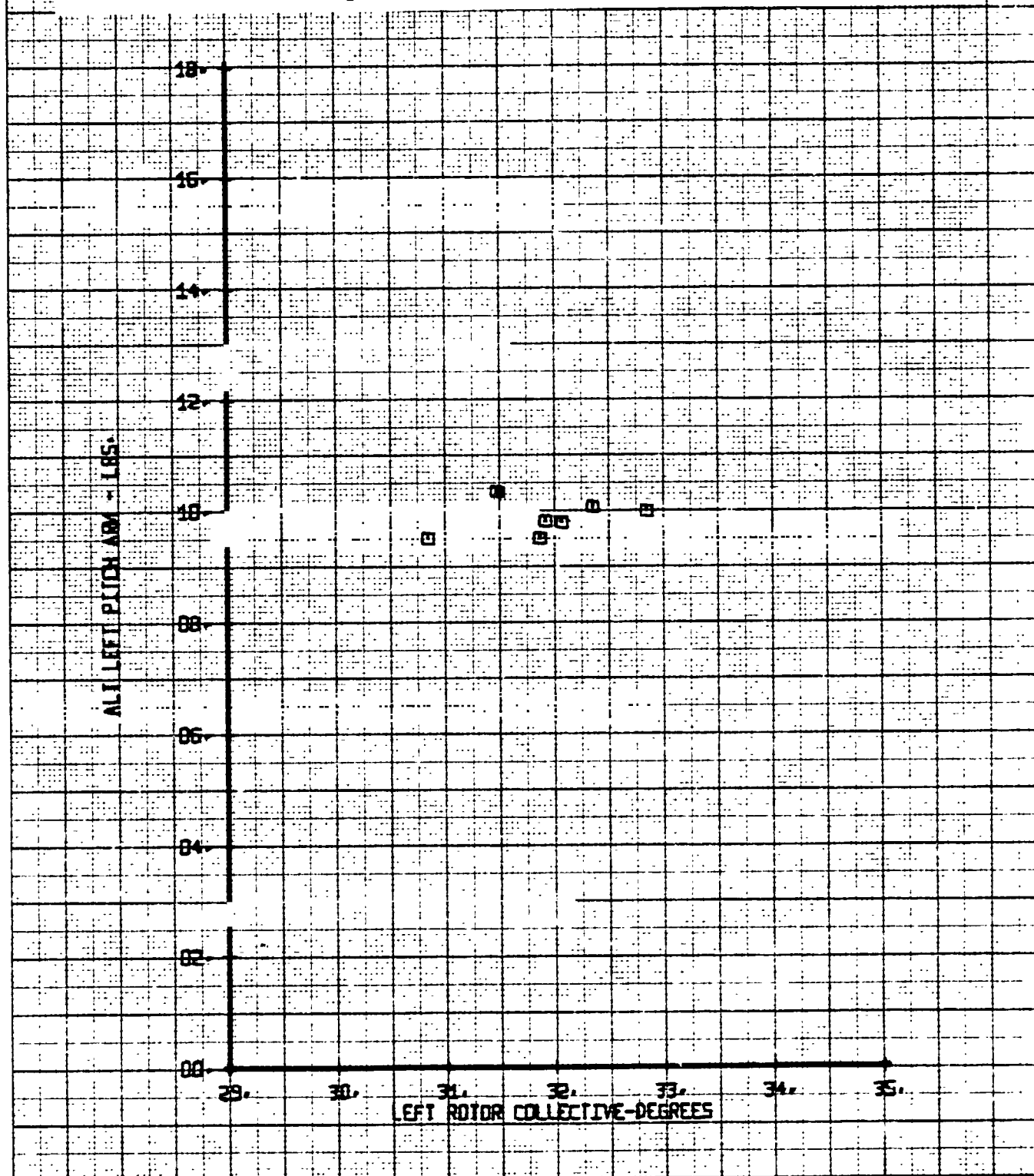






| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | YR0950-1 | LEGEND | | | | |
| LEFT ROTOR MODEL | | SYM | BLN | IN-HAC | KNOTS-F.S. | ALPHA-FLS |
| LEFT ROTOR DATA | | □ | 115 | 30 | 180 | -6 |
| | | | | | | FLAP 31 |

Figure 11-117. Alt. Left Pitch Link Load Versus Left Rotor Collective ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.



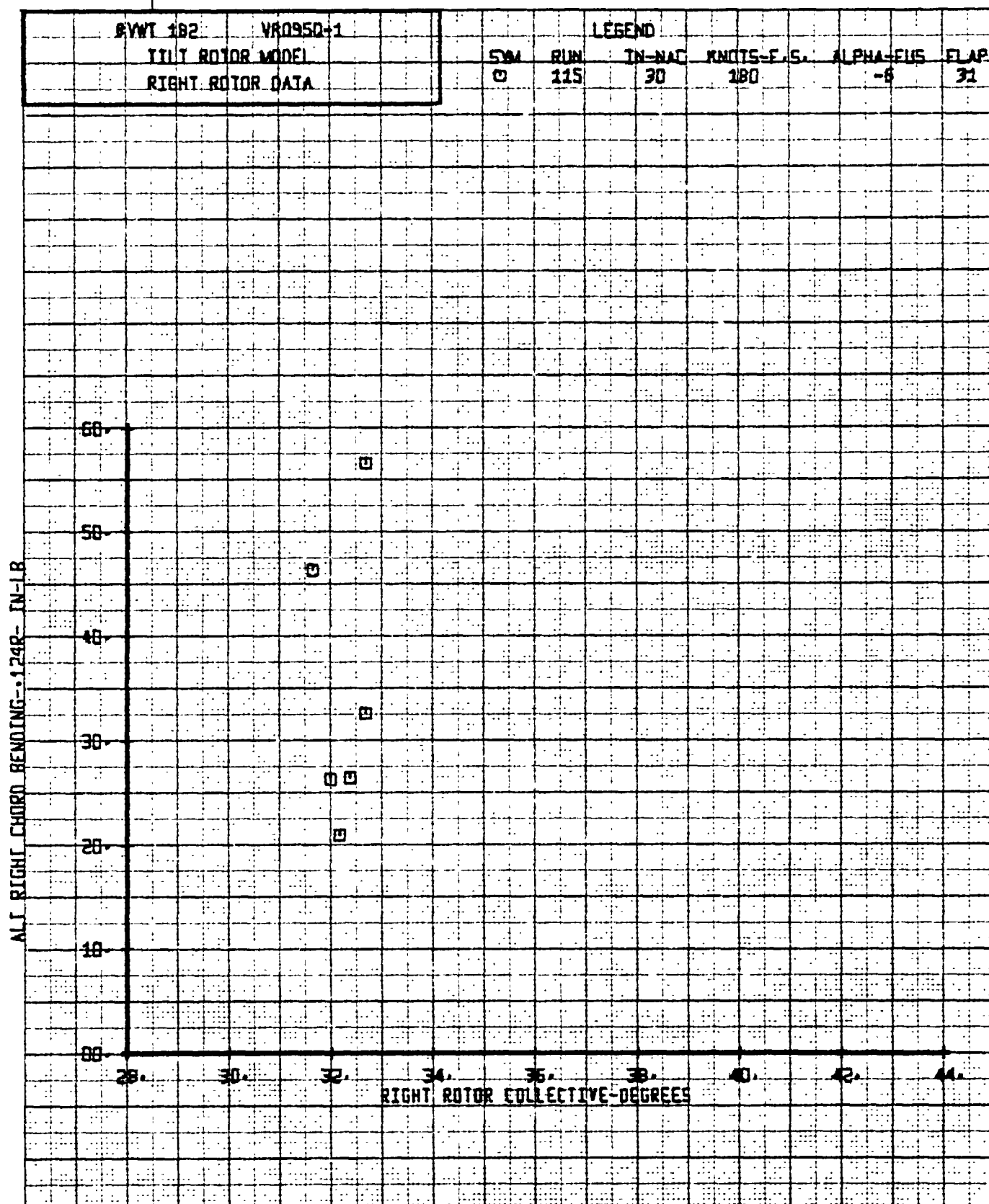
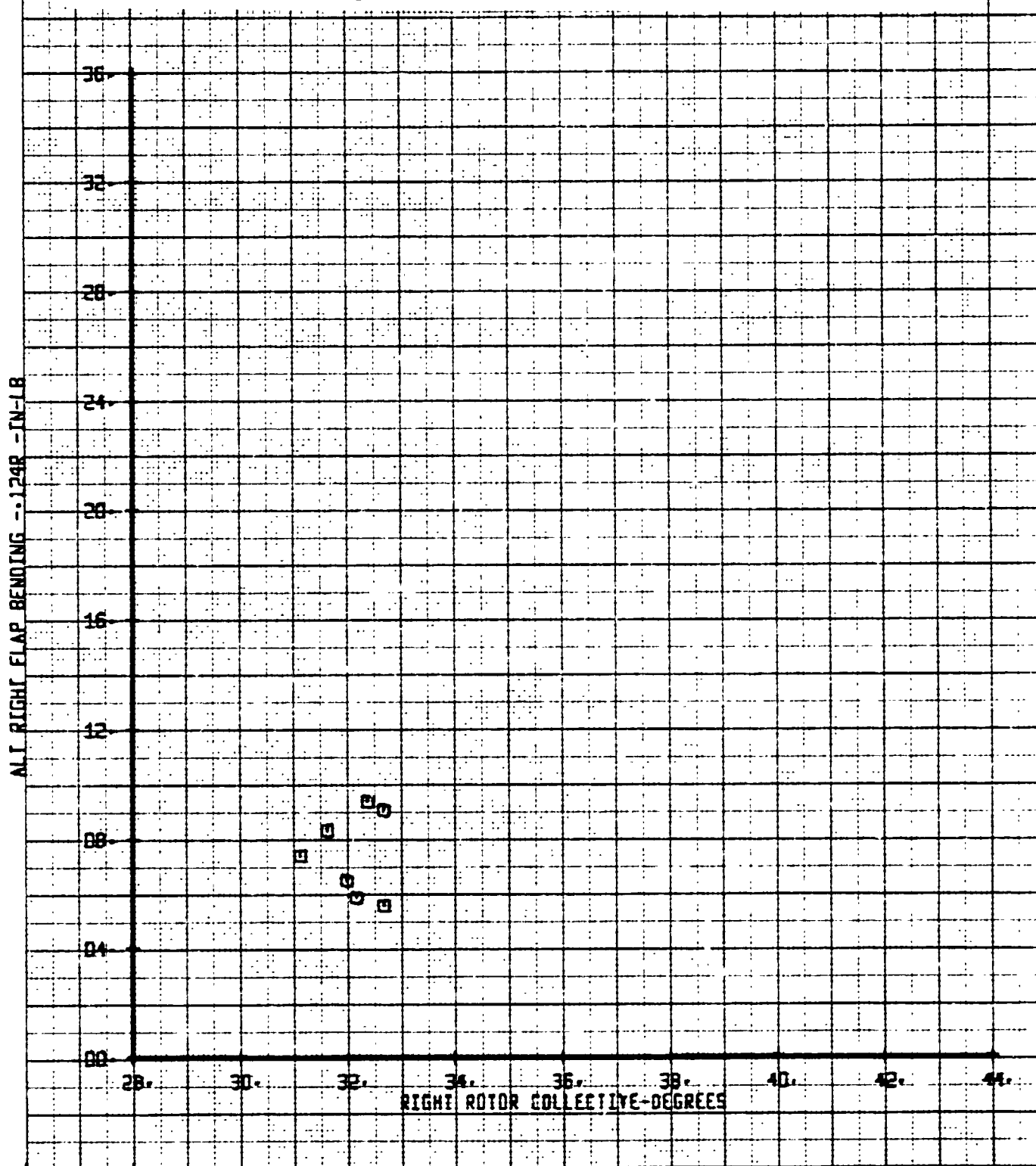


Figure 11-118. Alt. Right Chord Bending Versus Right Rotor Collective ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.

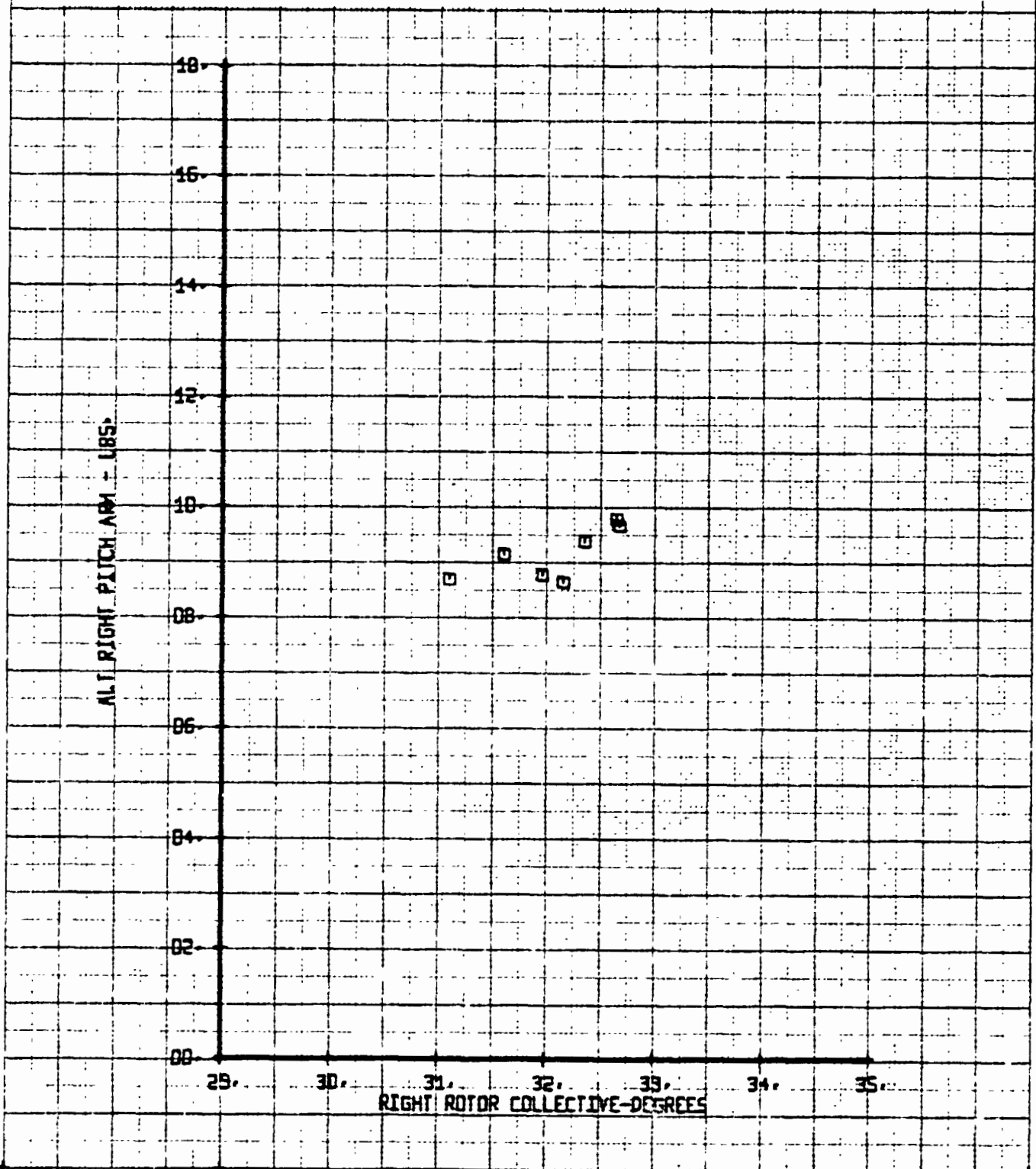
| | | | | | | |
|-------------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | VR0950-1 | LEGEND | | | | |
| TITUT ROTOR MODEL | | SW | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FUS |
| RIGHT ROTOR DATA | | 0 | 115 | 30 | 180 | -6 |
| | | | | | | 31 |

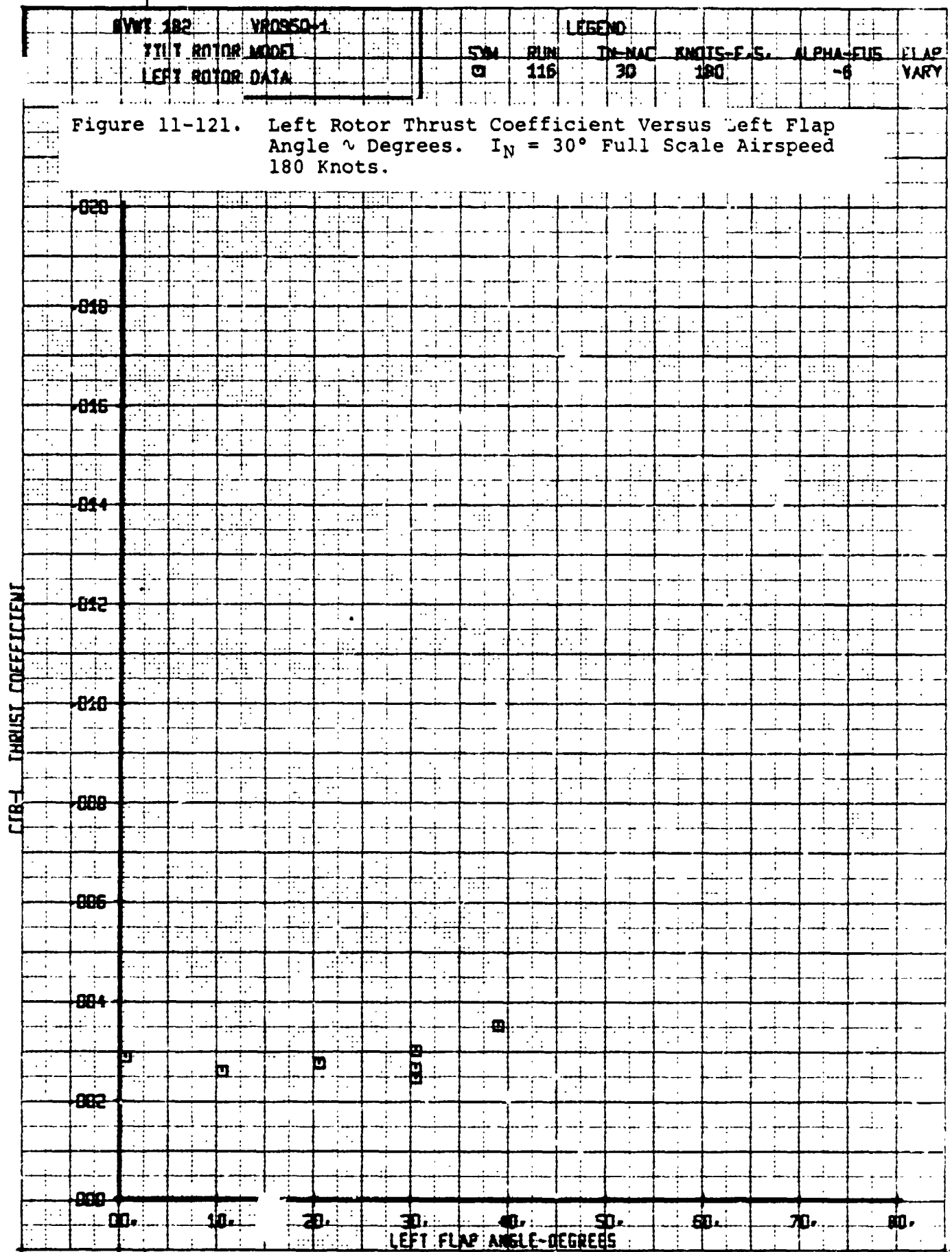
Figure 11-119. Alt. Right Flap Bending Versus Right Rotor Collective ~ Degrees. $I_N = 30^\circ$ Full Scale
Airspeed 180 Knots.



| | | | | | | |
|-------------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | YR0950-1 | LEGEND | | | | |
| RIGHT ROTOR MODEL | | SYM | RUN | IN-HAC | KNOTS-F.S. | ALPHA-FUS |
| RIGHT ROTOR DATA | | □ | 115 | 30 | 180 | -6 |
| | | | | | | FLAP 31 |

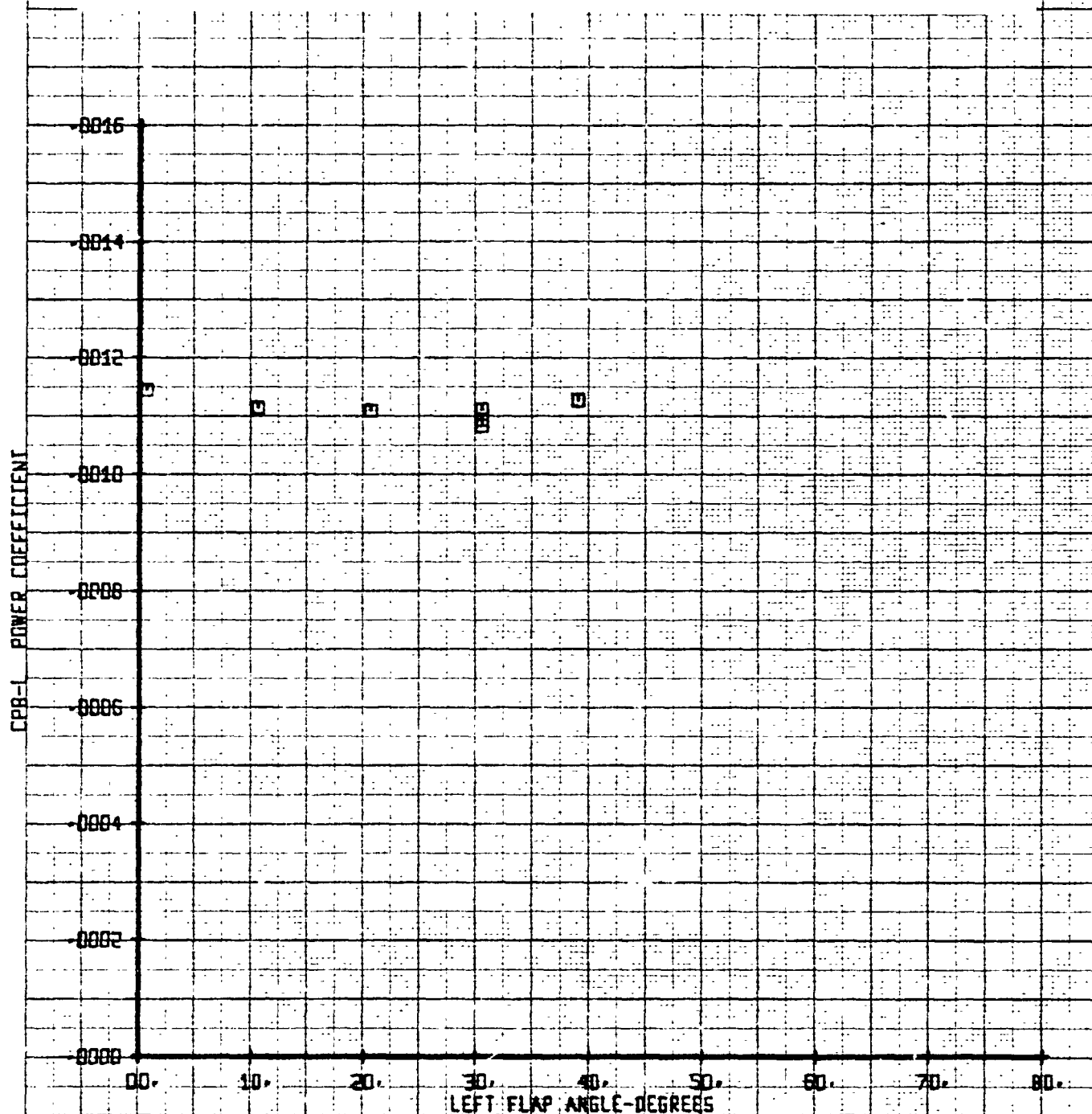
Figure 11-120. Alt. Right Pitch Link Load Versus Right Rotor Collective ~ Degrees. $I_N = 30^\circ$ Full Scale
Airspeed 180 Knots.

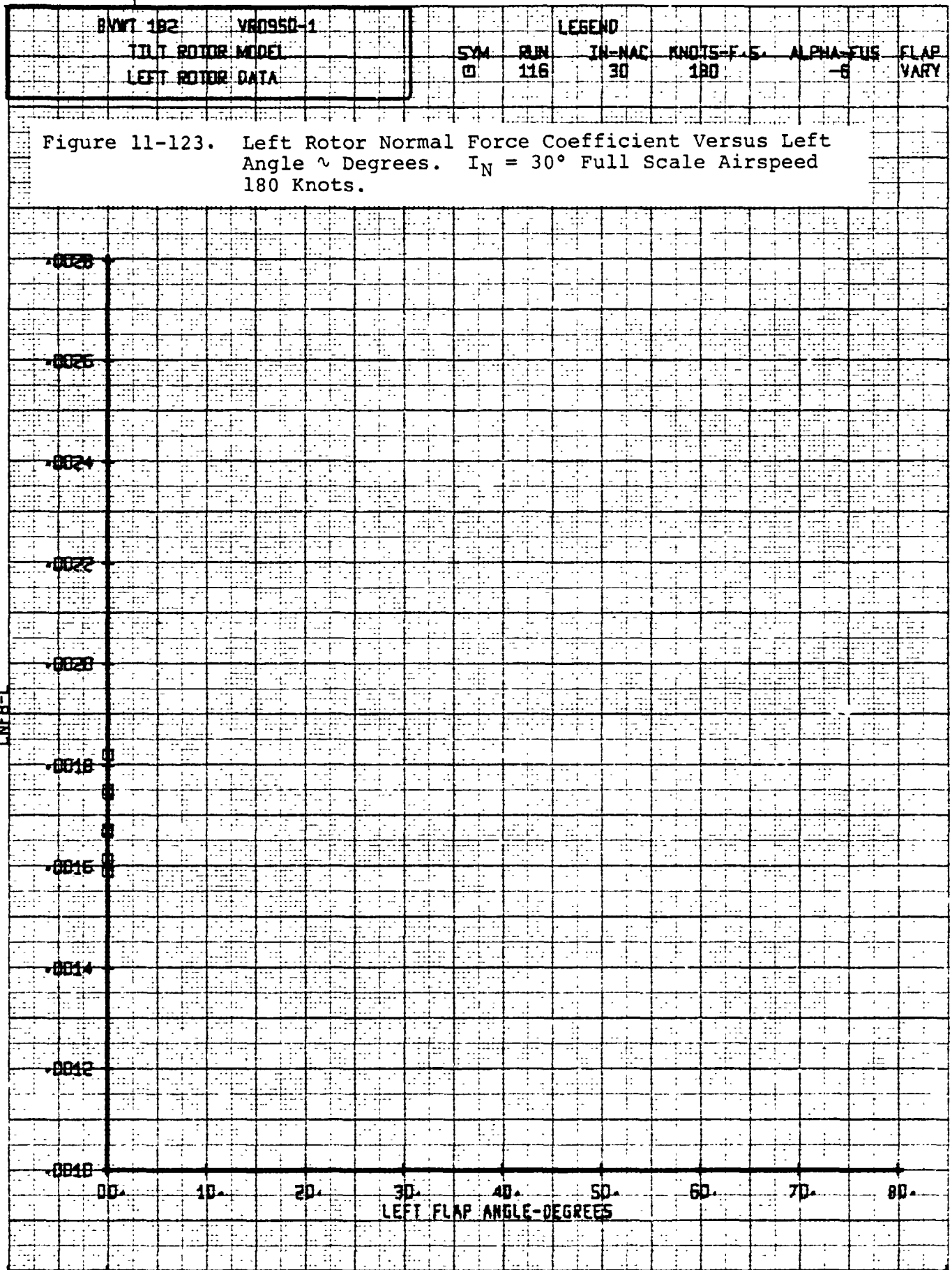




| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | VR0950-1 | LEGEND | | | | |
| YULI ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FUS |
| LEFT ROTOR DATA | | □ | 116 | 30 | 180 | -6 |
| | | | | | | FLAP VARY |

Figure 11-122. Left Rotor Power Coefficient Versus Left Angle α Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.





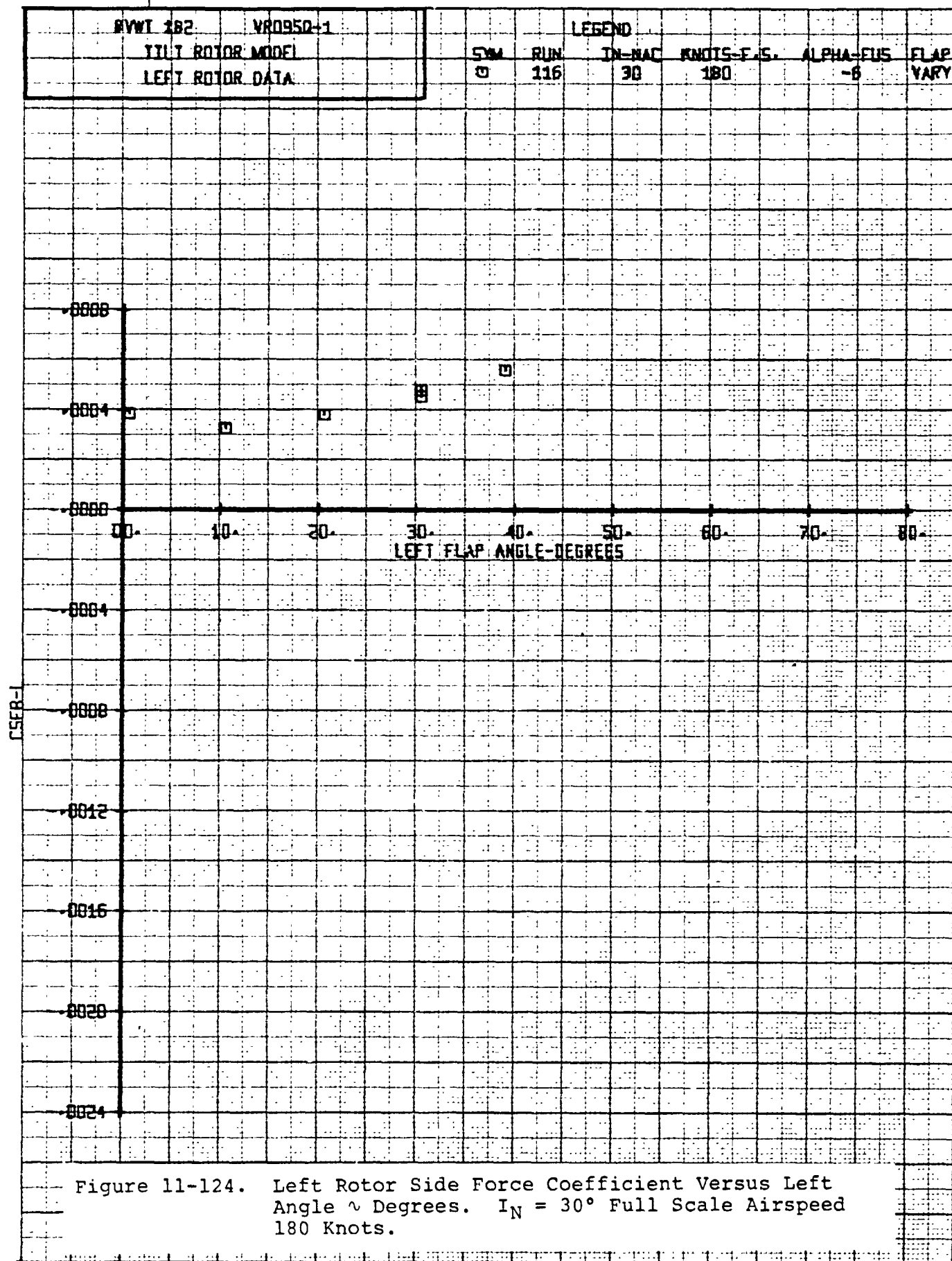
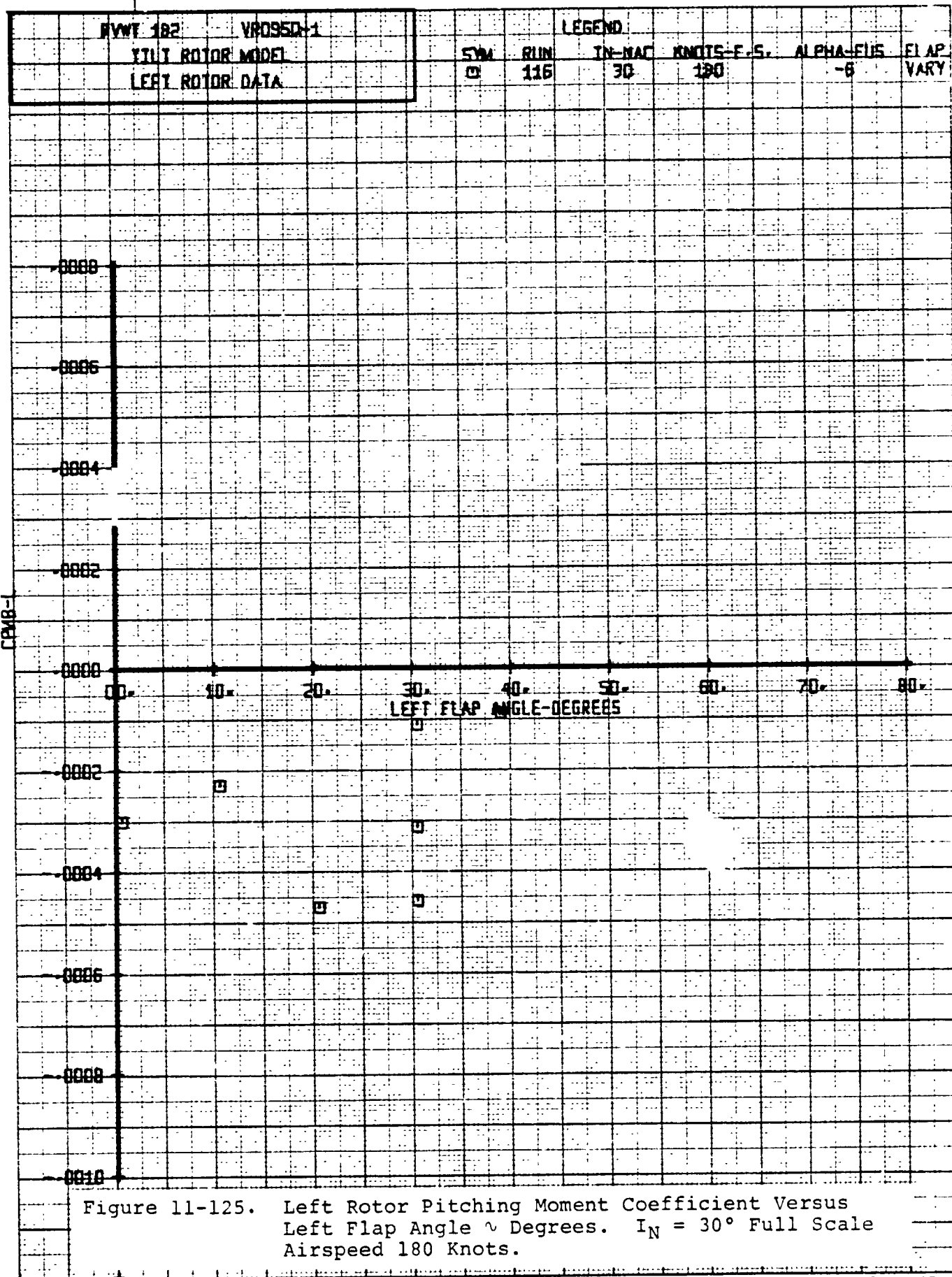


Figure 11-124. Left Rotor Side Force Coefficient Versus Left Angle ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.



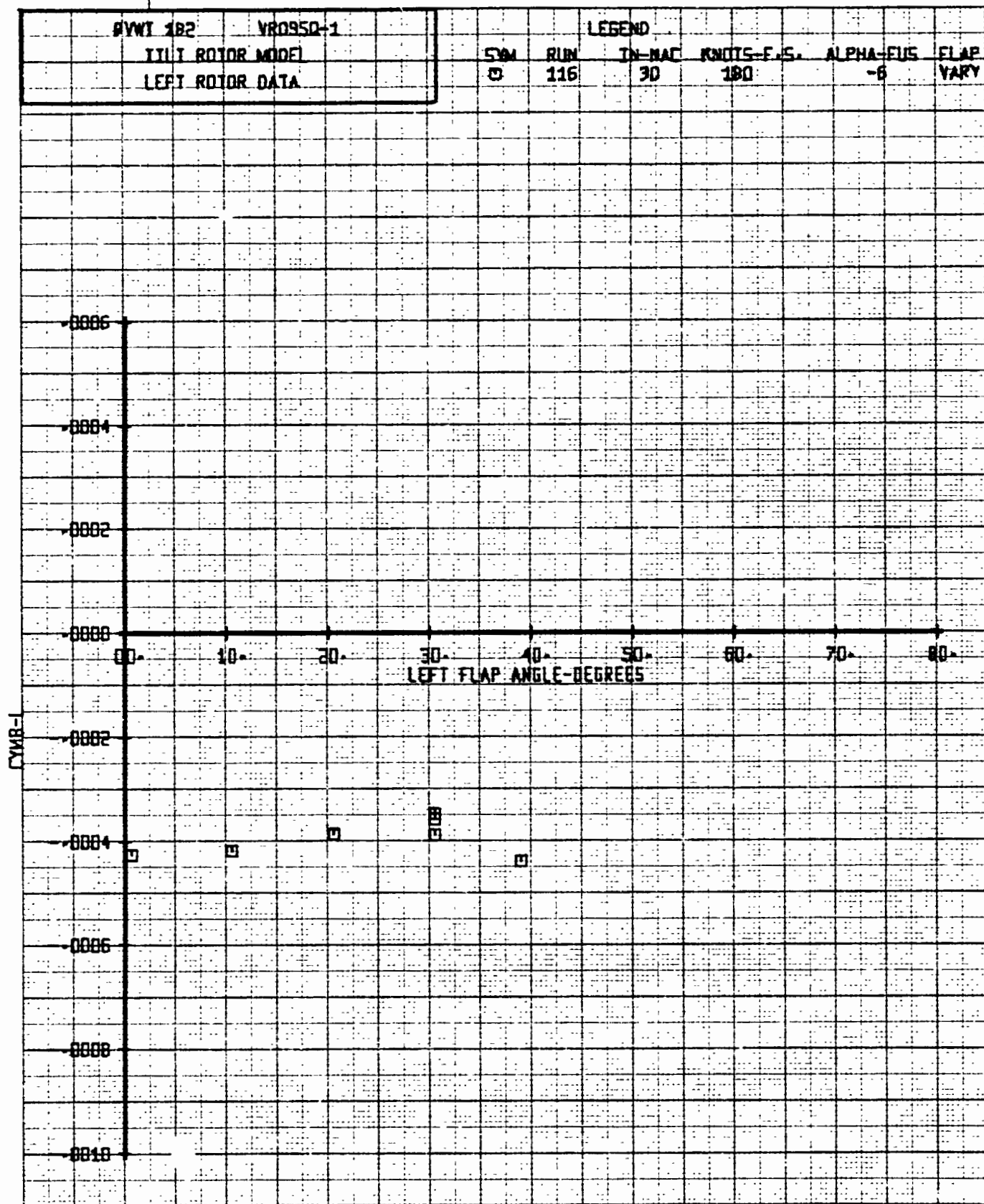
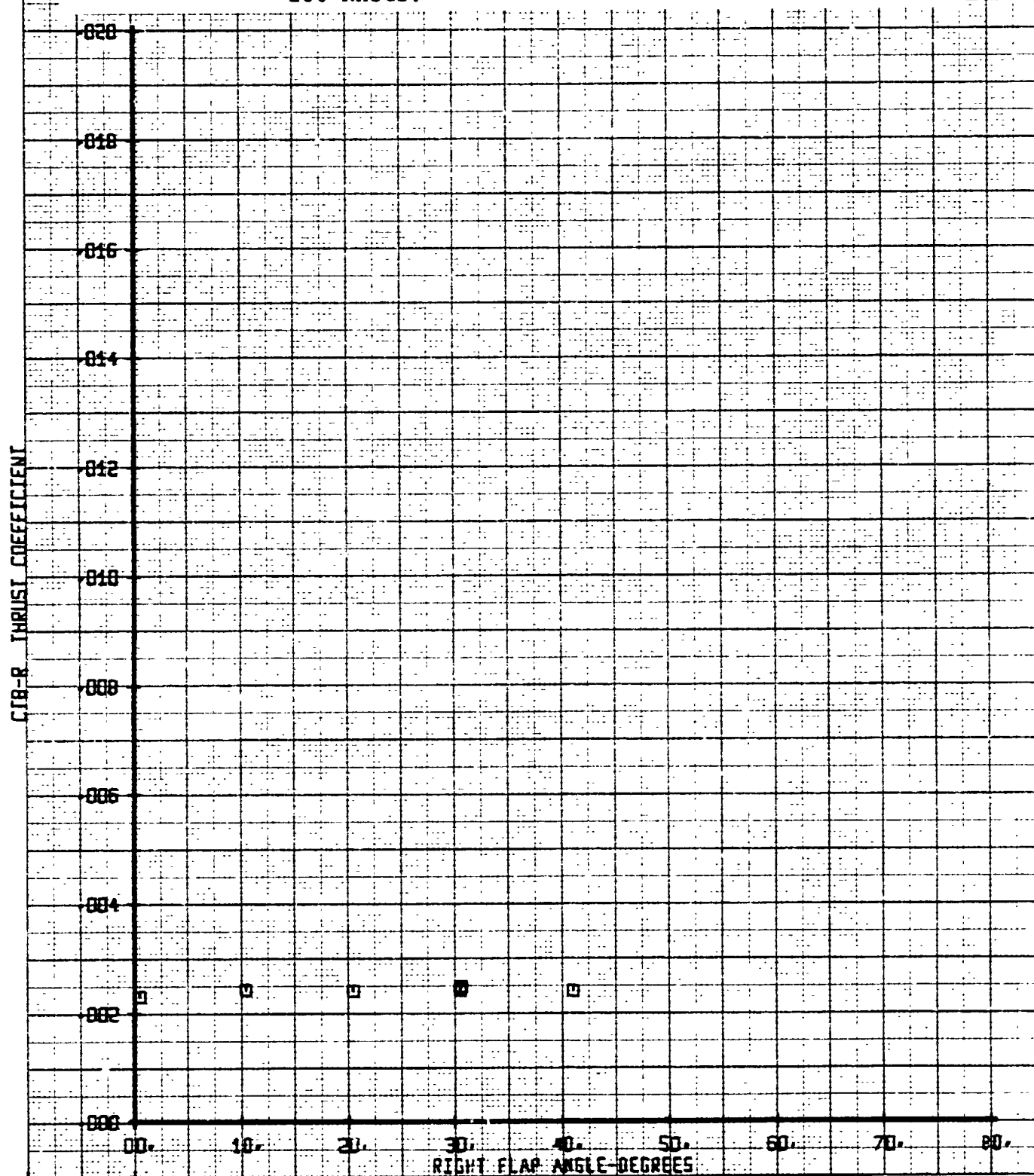


Figure 11-126. Left Rotor Yawing Moment Coefficient Versus Left Flap Angle ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.

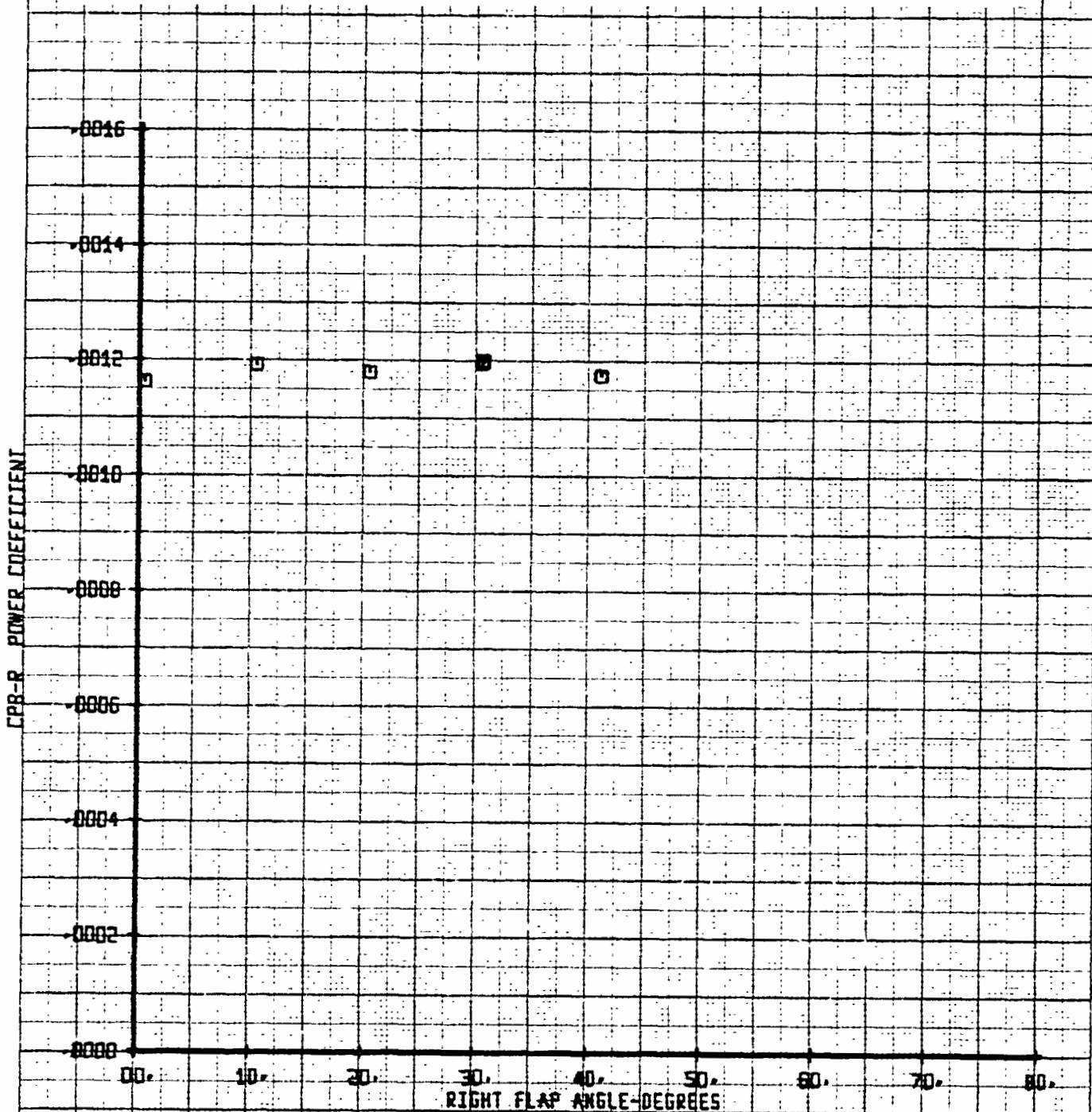
| | | | | | | | |
|-------------------|----------|--------|-----|--------|------------|-----------|-------|
| BVWT 182 | VR0950-1 | LEGEND | | | | | |
| LEFT ROTOR * 10E1 | | SYM | RUN | IN-MAC | KNOTS-F.S. | ALPHA-EUS | EI AP |
| RIGHT ROTOR DATA | | □ | 116 | 30 | 180 | -6 | VARY |

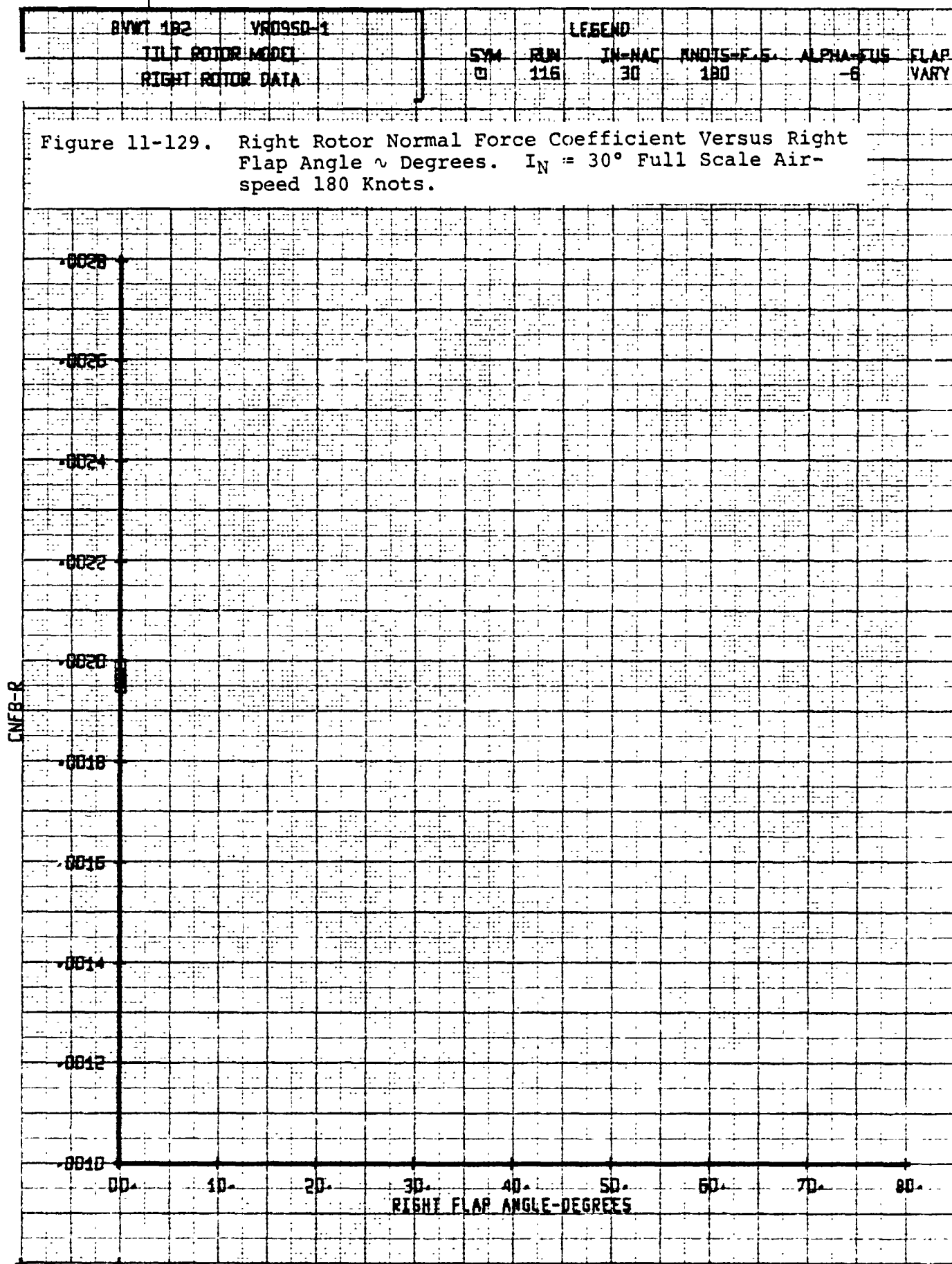
Figure 11-127. Right Rotor Thrust Coefficient Versus Right Flap Angle ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.

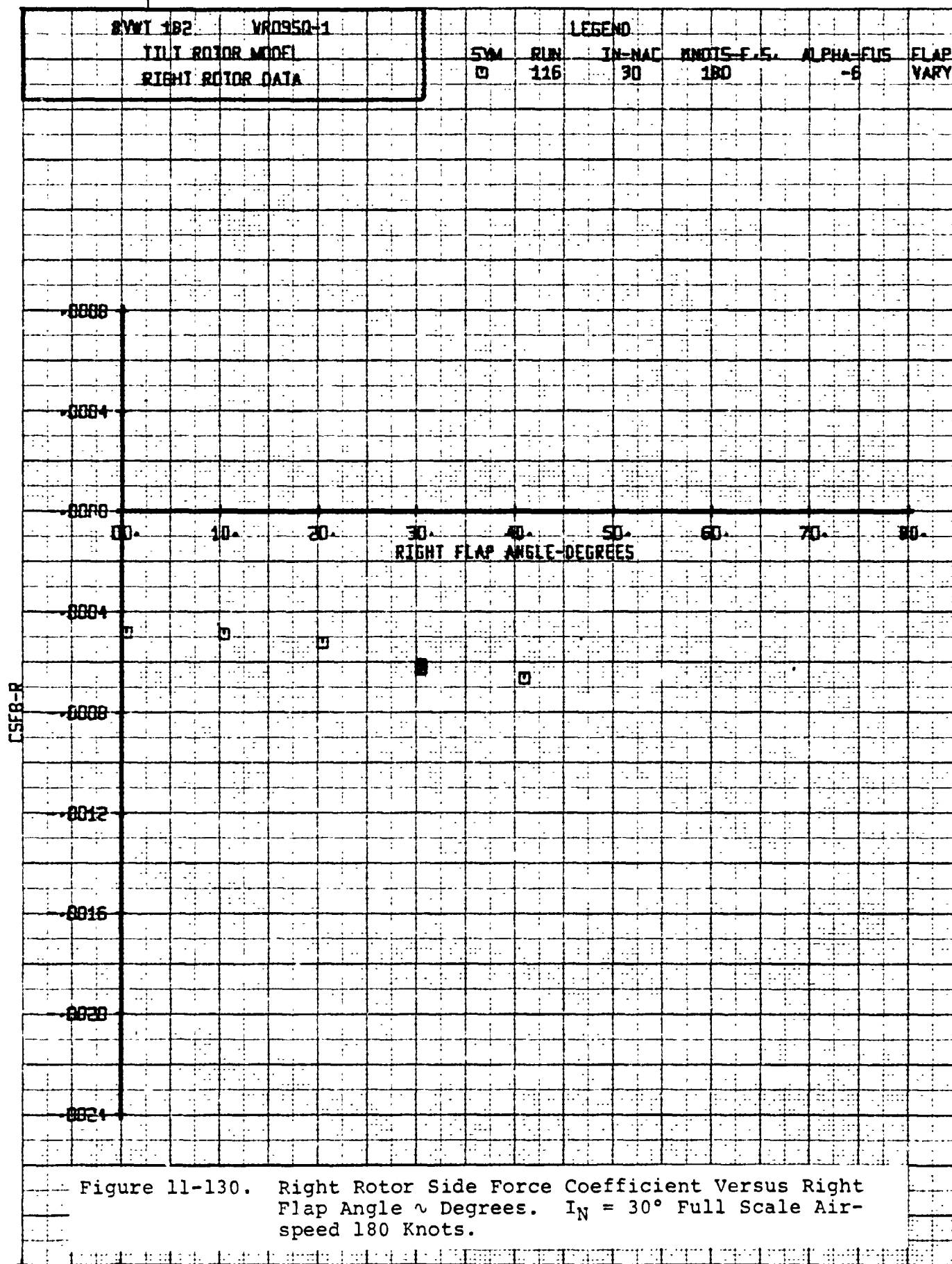


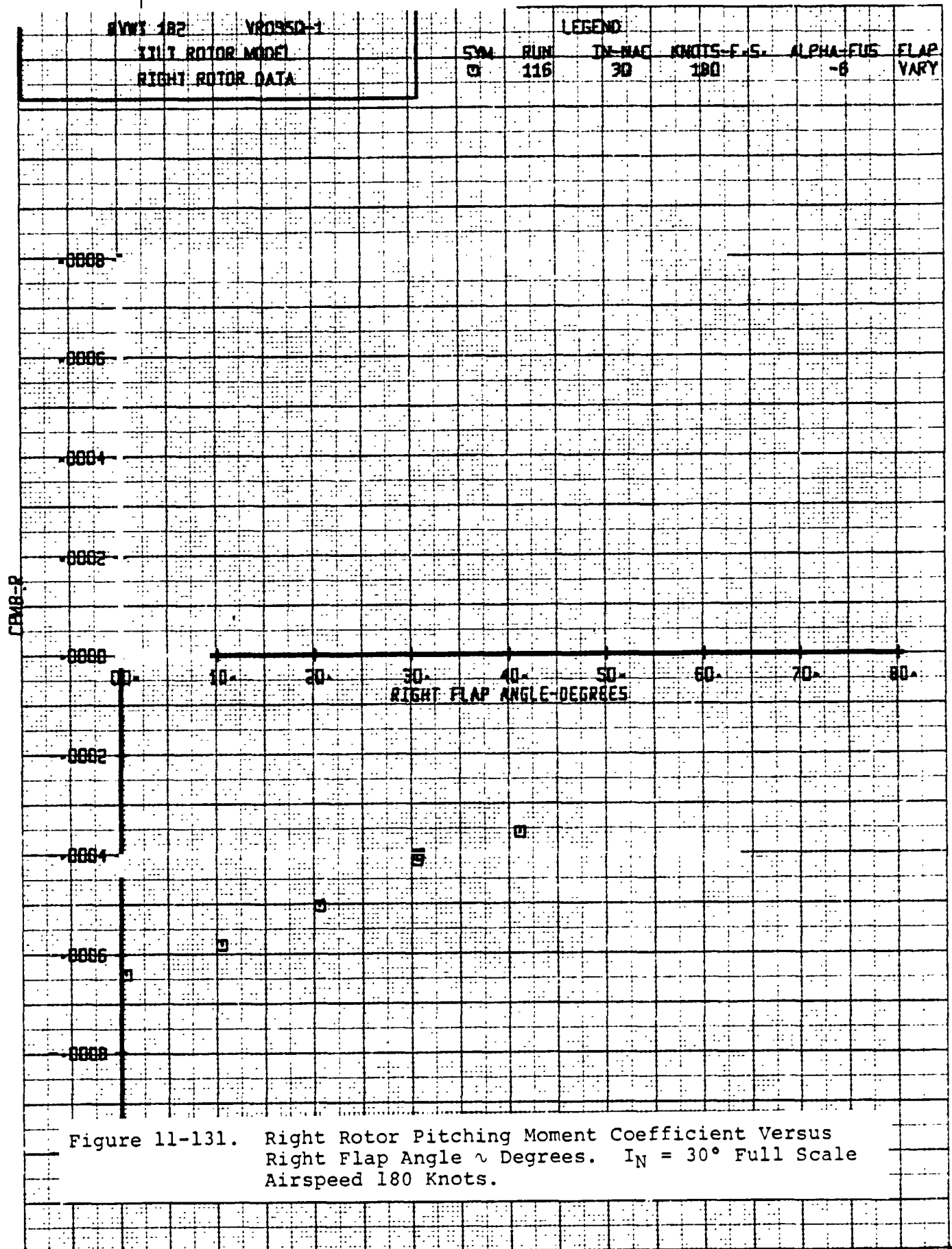
| | | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|------|
| BVWT 182 | VR0950-1 | LEGEND | | | | | |
| RIGHT ROTOR DATA | | SYM | RUN | IN-MAC | KNOTS-F.S. | ALPHA-FUS | FLAP |
| | | 0 | 116 | 30 | 180 | -6 | VARY |

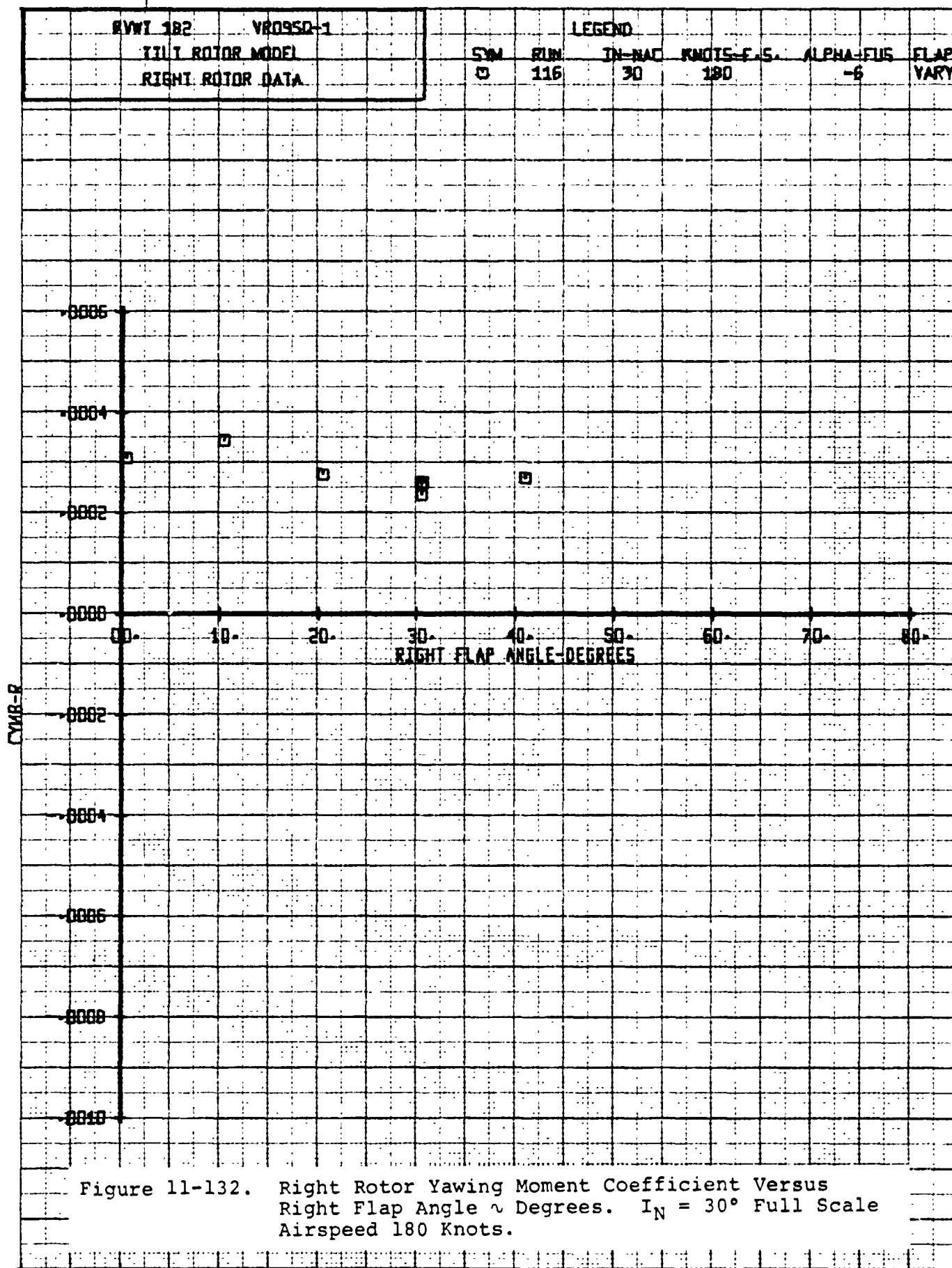
Figure 11-128. Right Rotor Power Coefficient Versus Right Flap Angle ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.





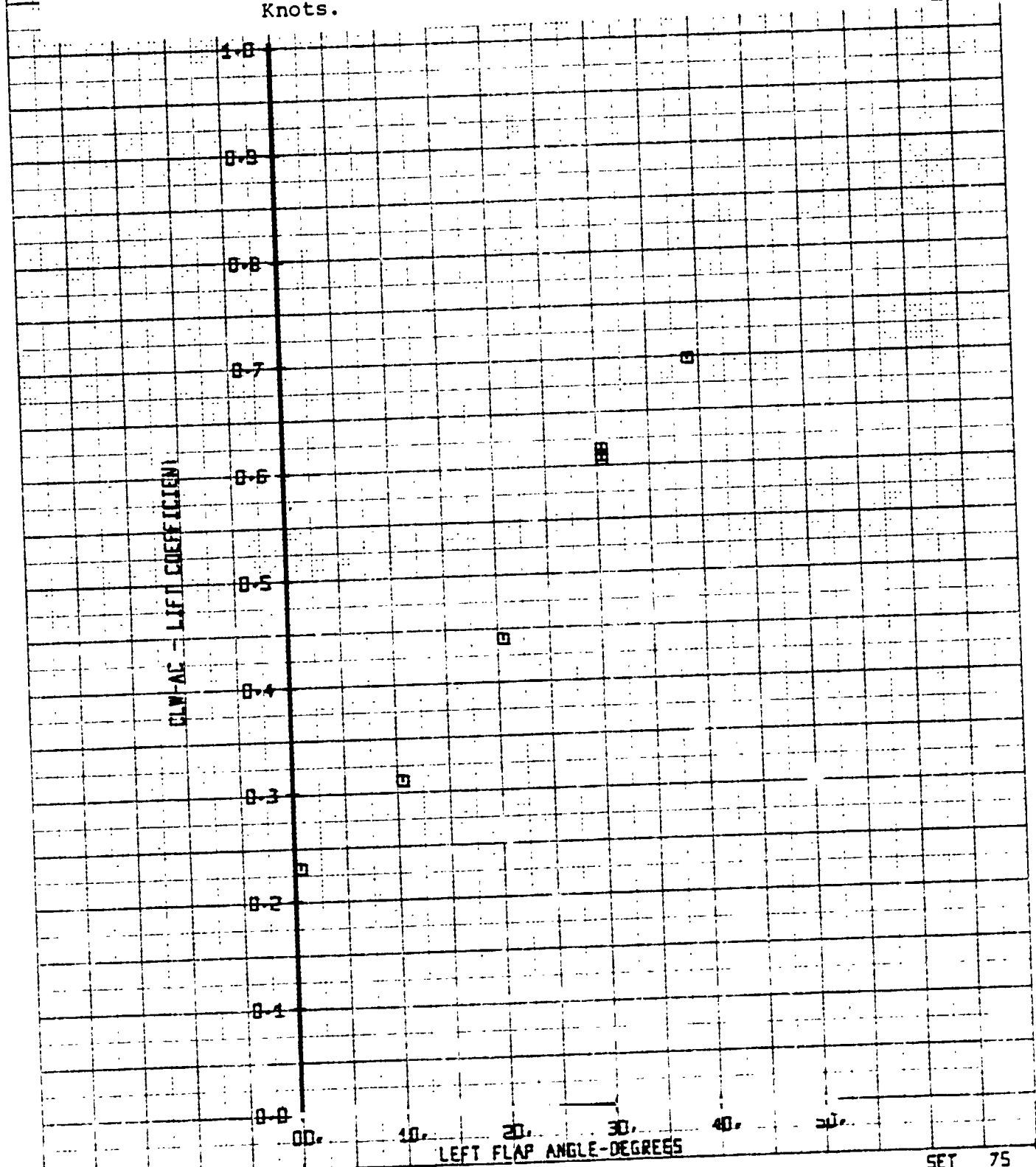


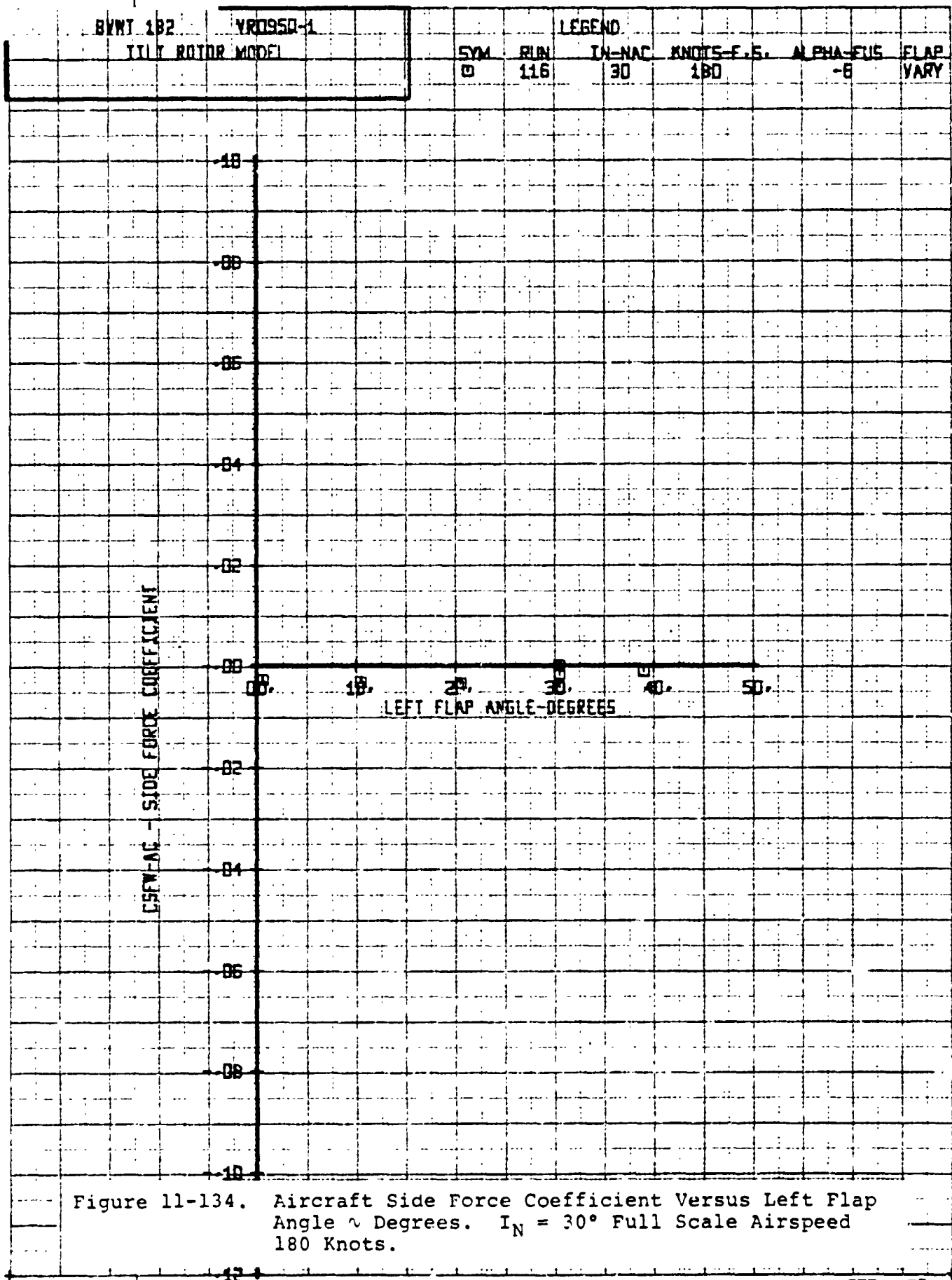




| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | VR1950-1 | LEGEND | | | | |
| TYLT ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-E.S. | ALPHA-EUS |
| | | 0 | 116 | 30 | 180 | -6 |
| | | | | | | FLAP VARY |

Figure 11-133. Aircraft Lift Coefficient Versus Left Flap Angle
 ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180
 Knots.





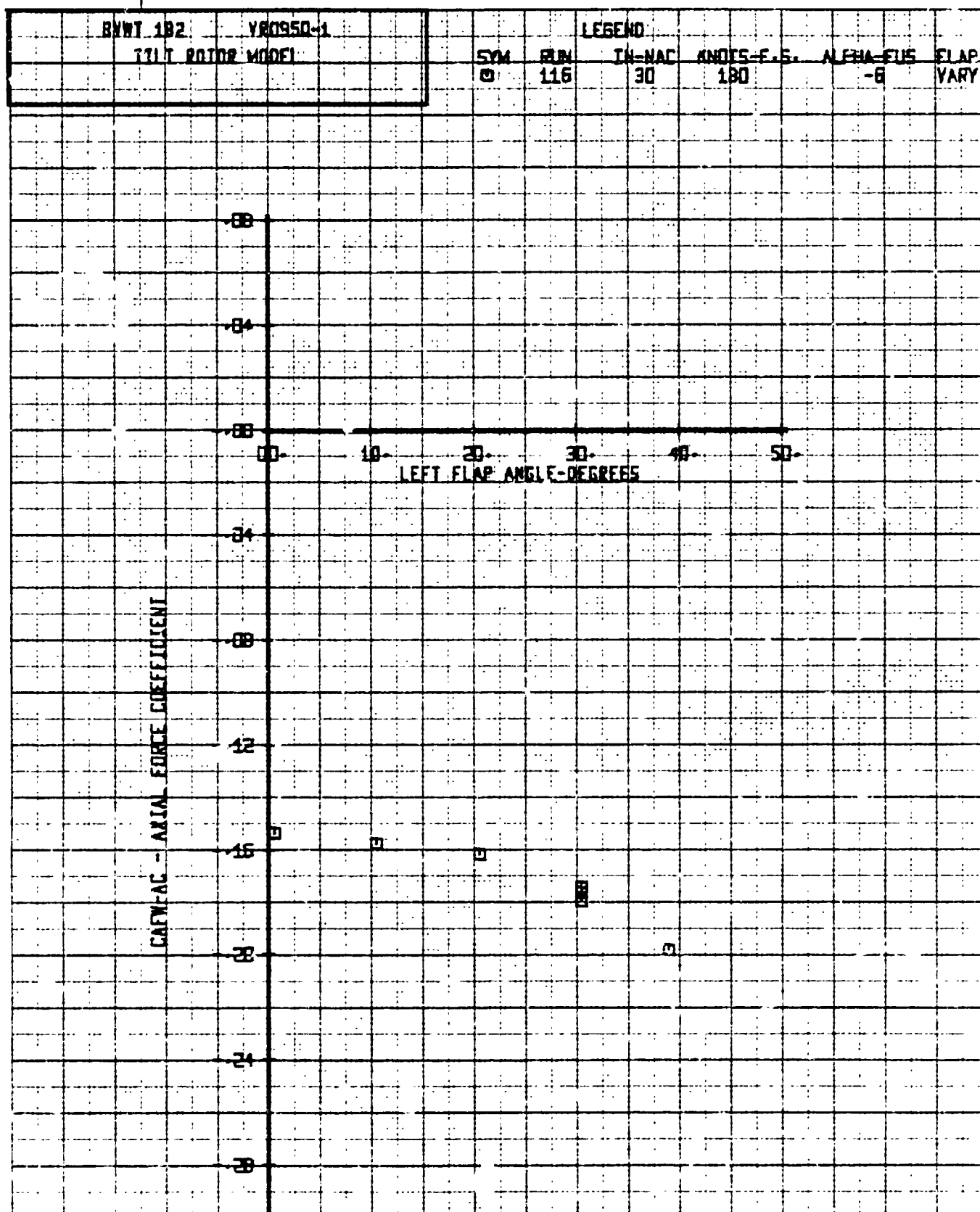


Figure 11-135. Aircraft Axial Force Coefficient Versus Left Flap Angle α Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.

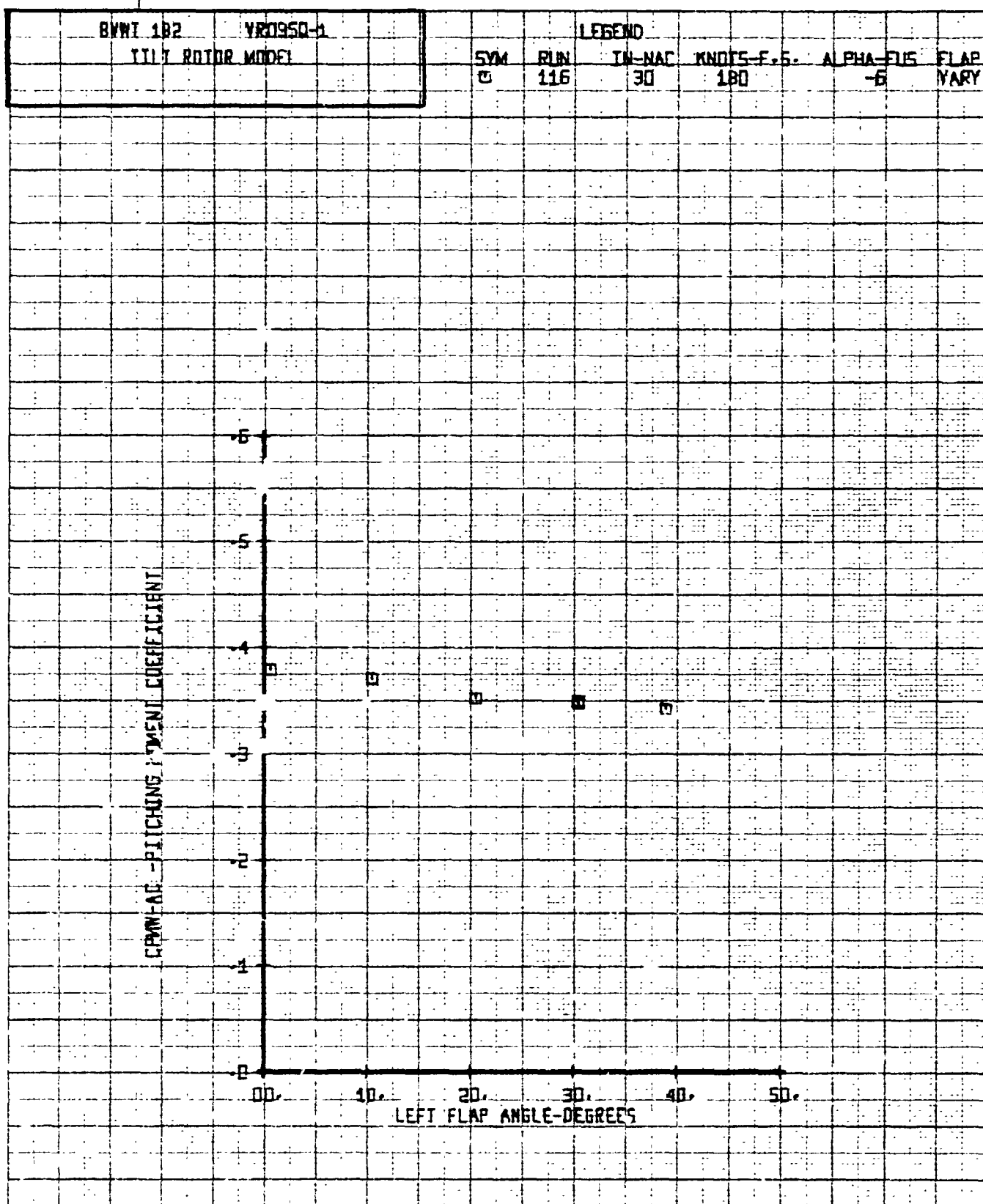


Figure 11-136. Aircraft Pitching Moment Coefficient Versus Left Flap Angle ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.

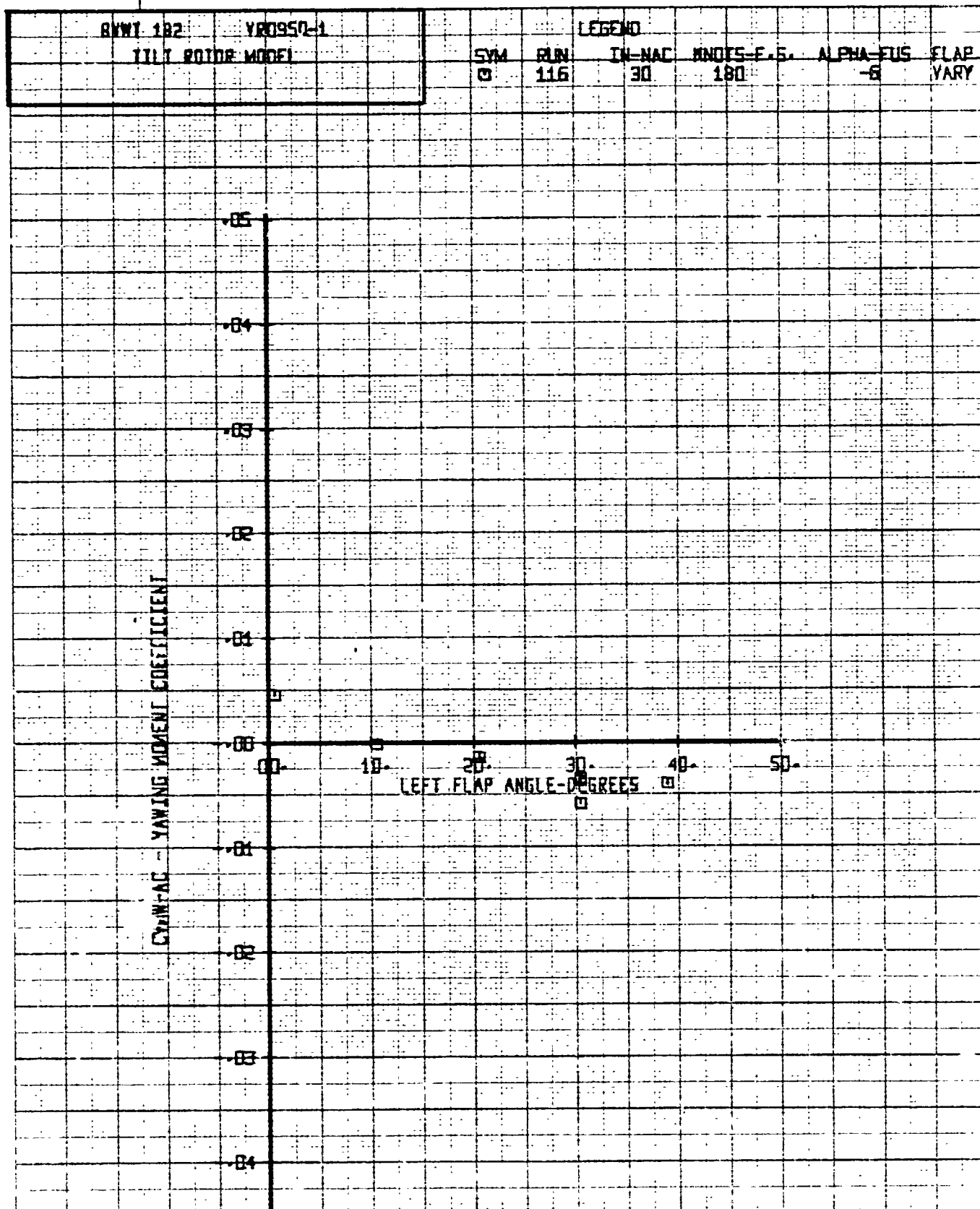
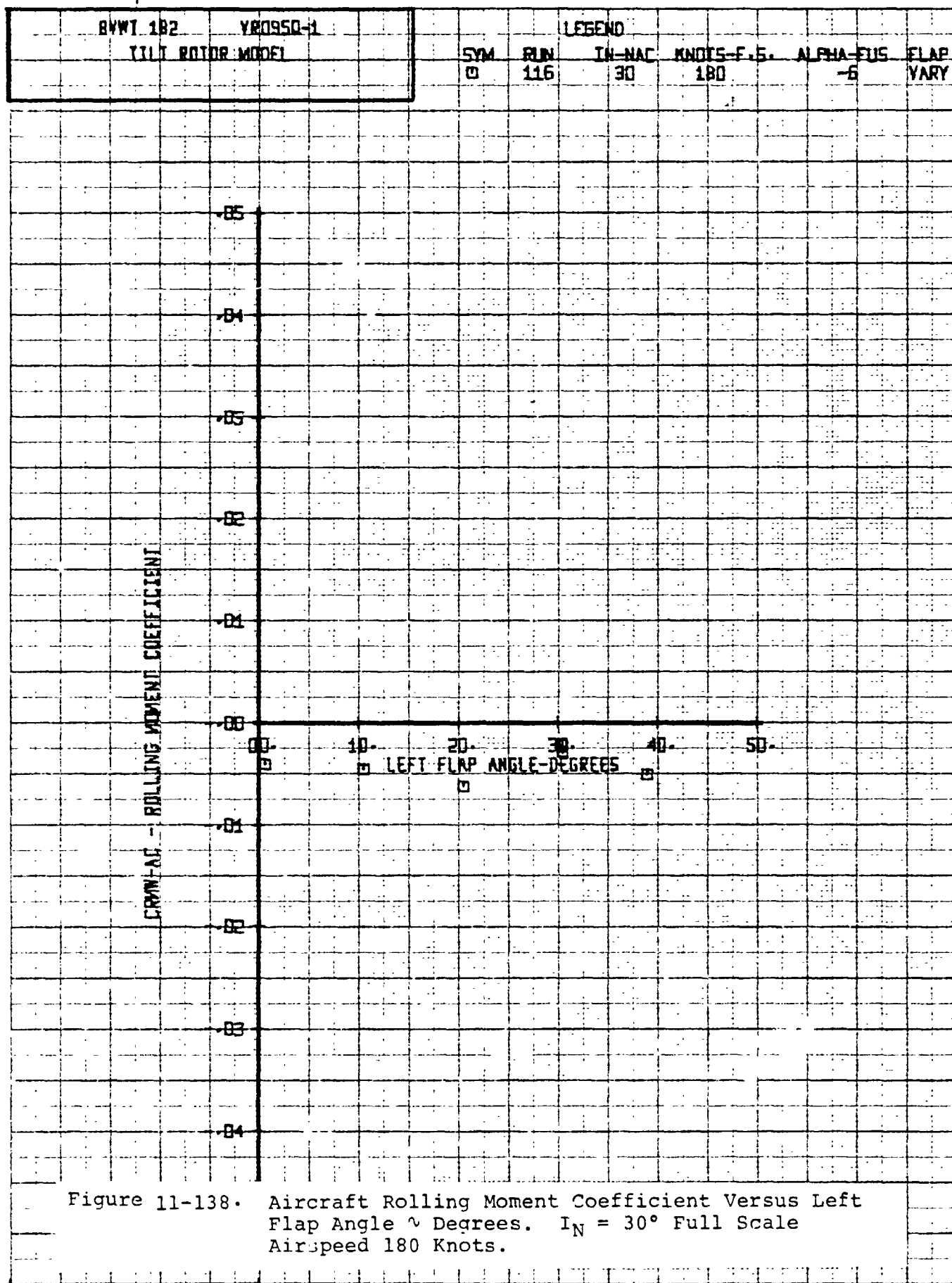


Figure 11-137. Aircraft Yawing Moment Coefficient Versus Left Flap Angle α Degrees. $I_N = 30^\circ$ Full Scale
Airspeed 180 Knots.



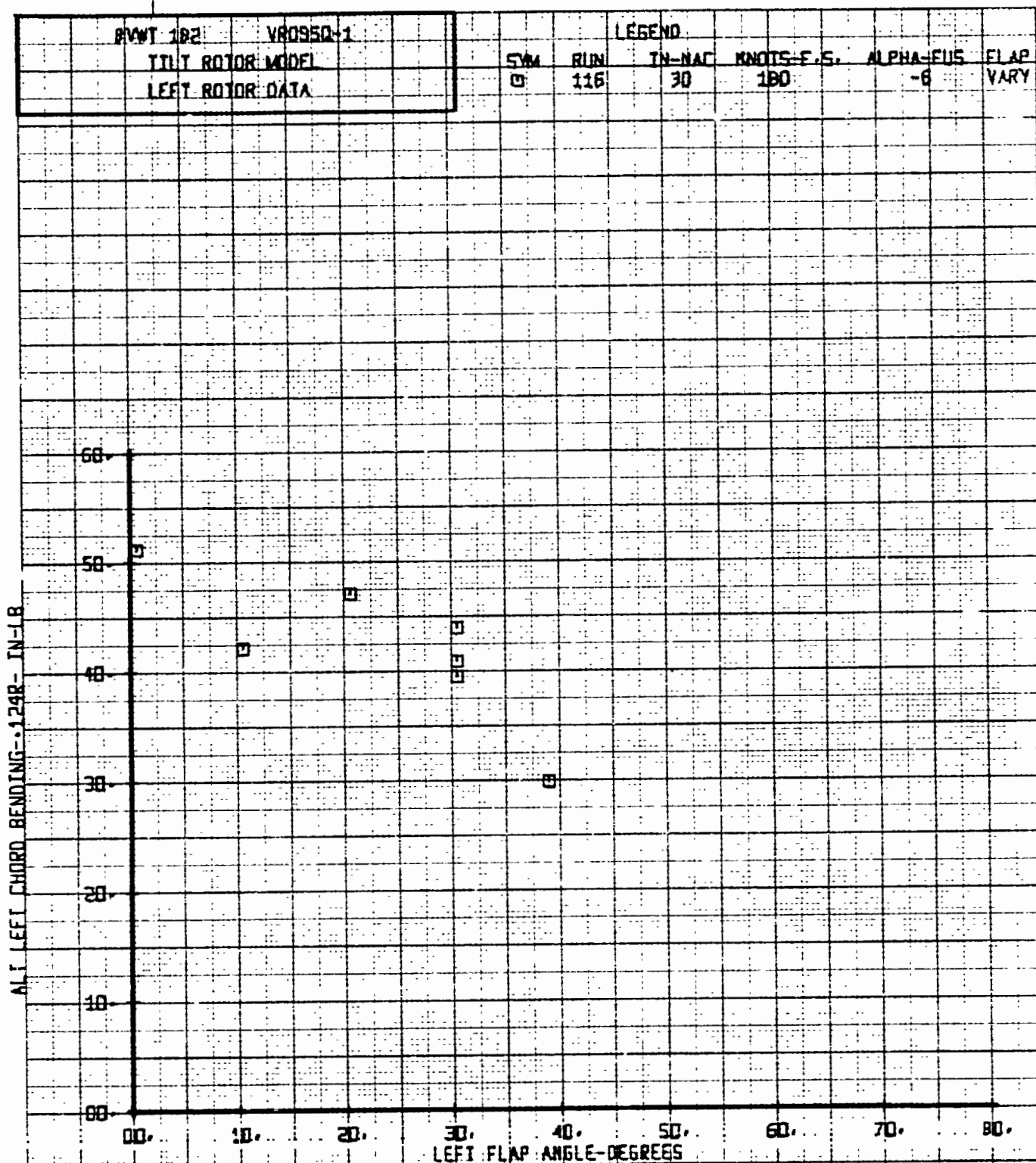
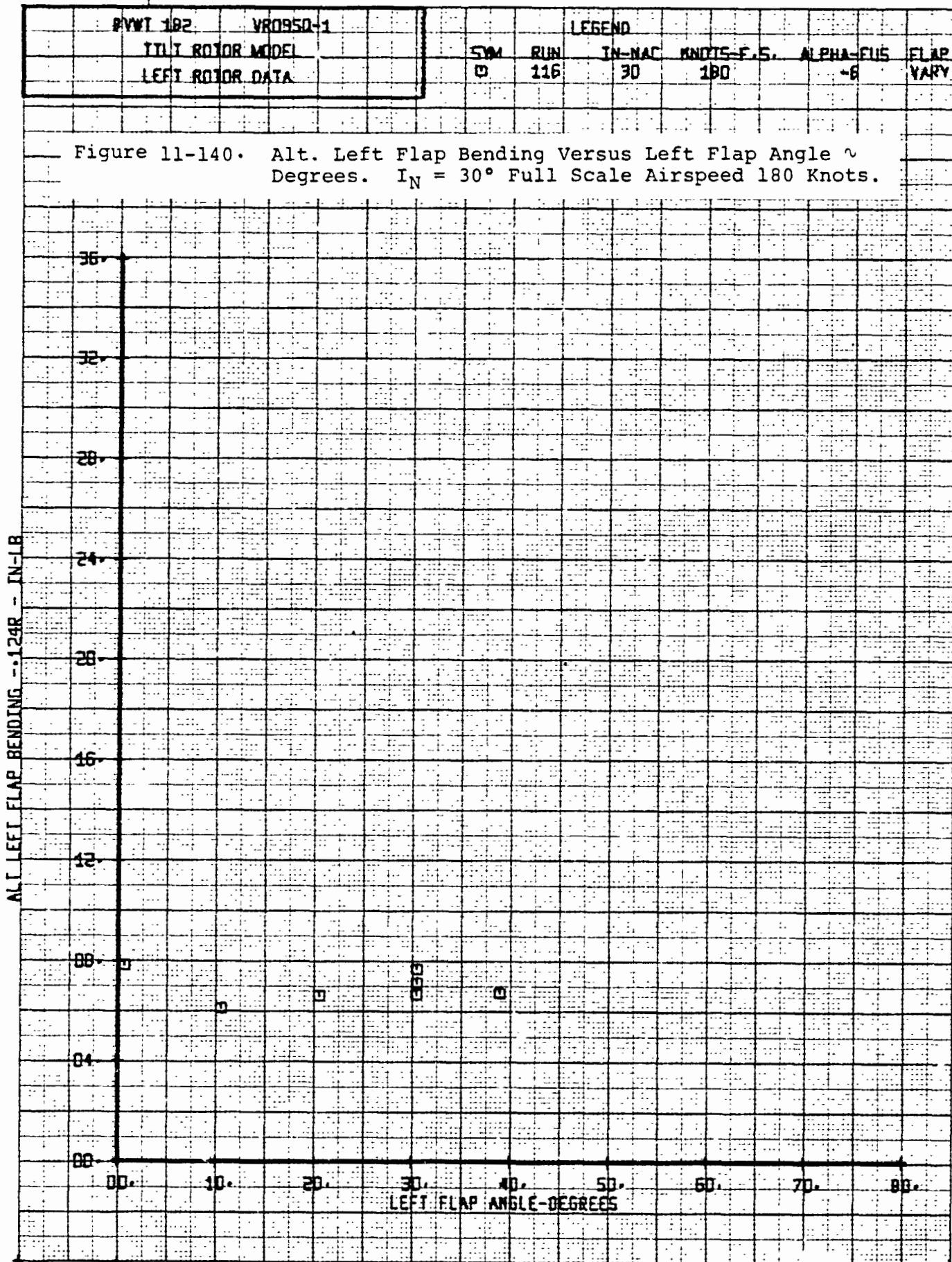
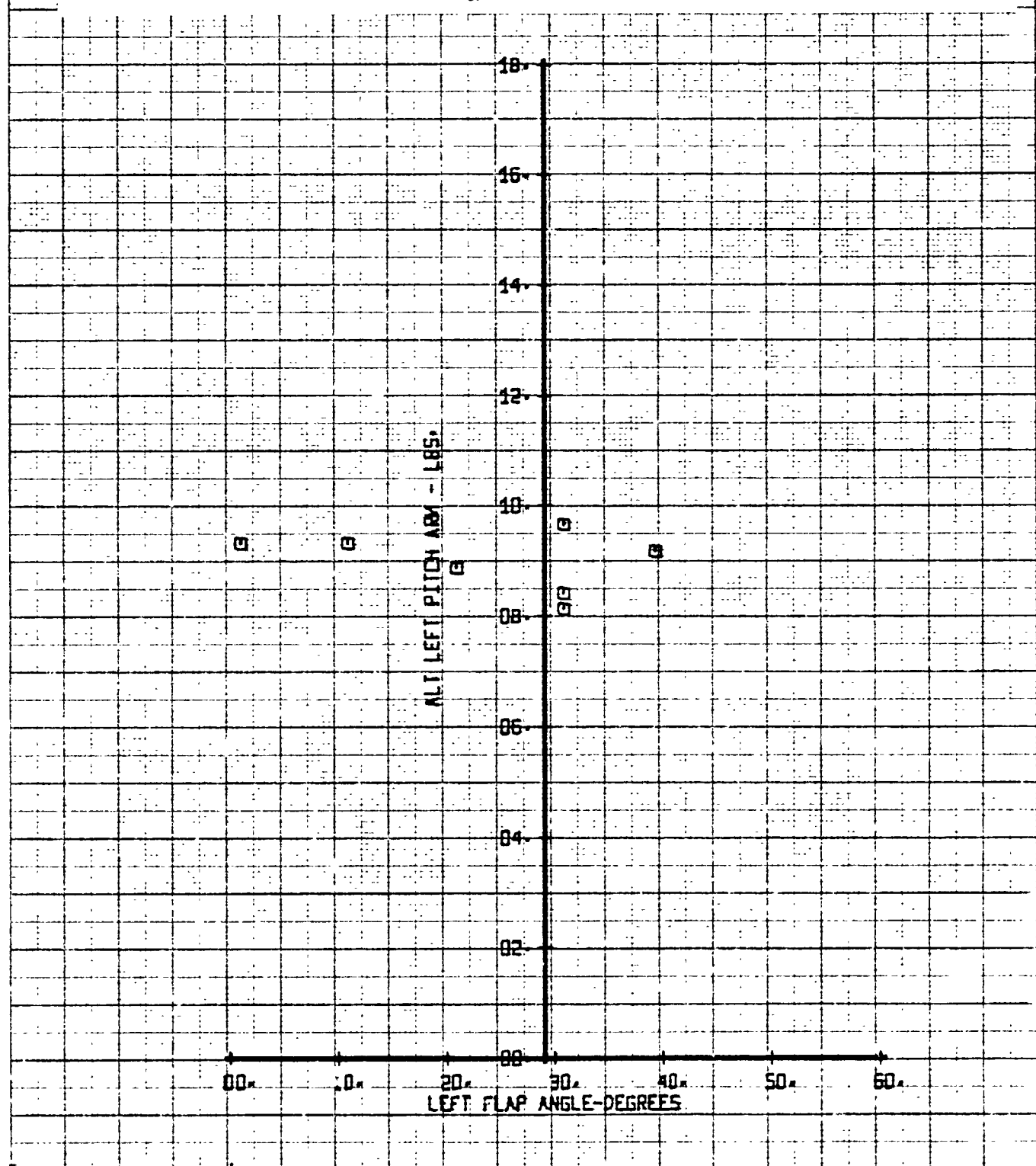


Figure 11-139. Alt. Left Chord Bending Versus Left Flap Angle
 ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180
 Knots.



| | | | | | | |
|------------------|----------|--------|-----|--------|-----------|-----------|
| RYWT 182 | VR0950-1 | LEGEND | | | | |
| TIIT ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-F-S | ALPHA-DEG |
| LEFT ROTOR DATA | | 0 | 116 | 30 | 180 | -5 |
| | | | | | | FLAP VARY |

Figure 11-141. Alt. Left Pitch Link Load Versus Left Flap Angle
 ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.



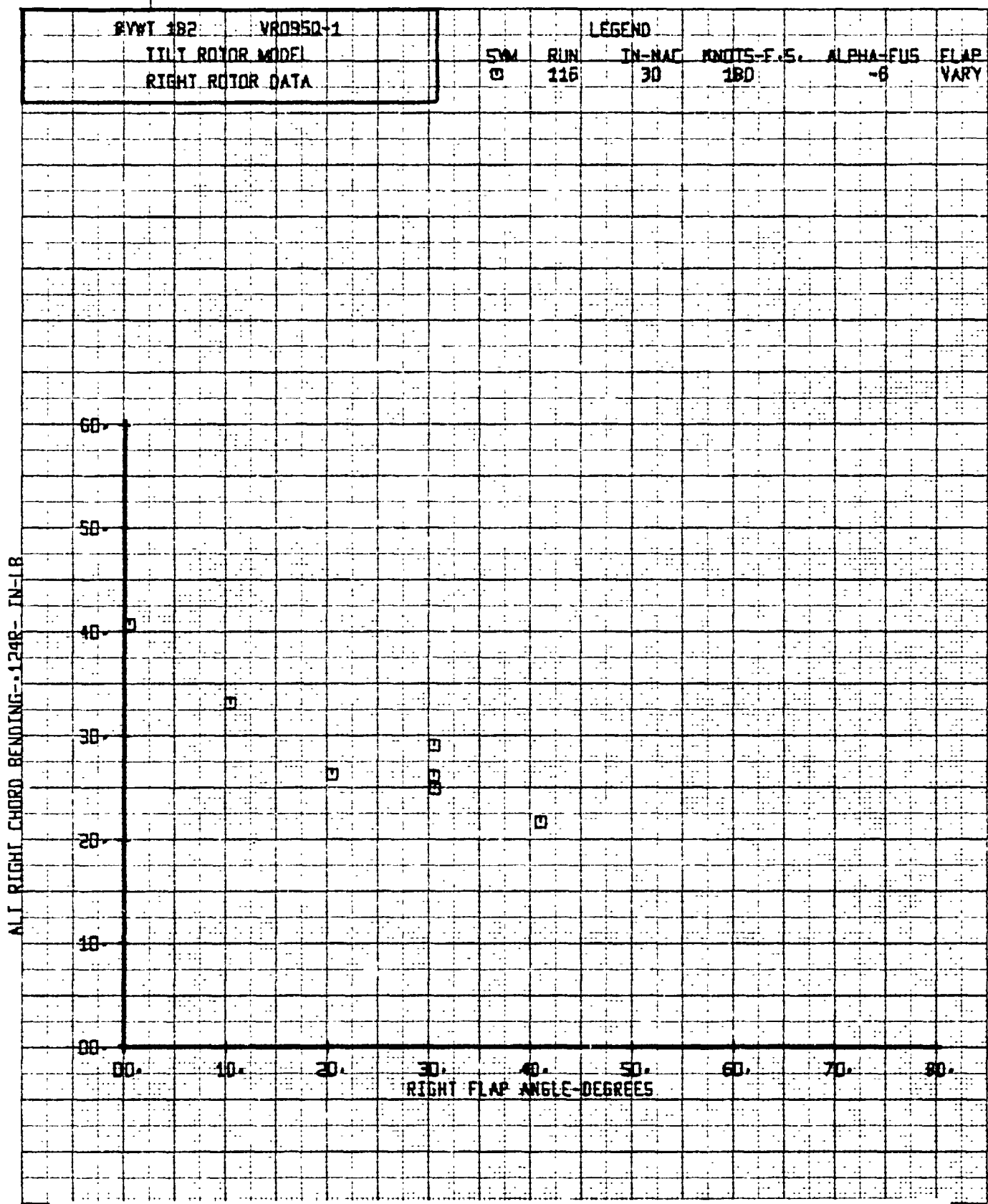
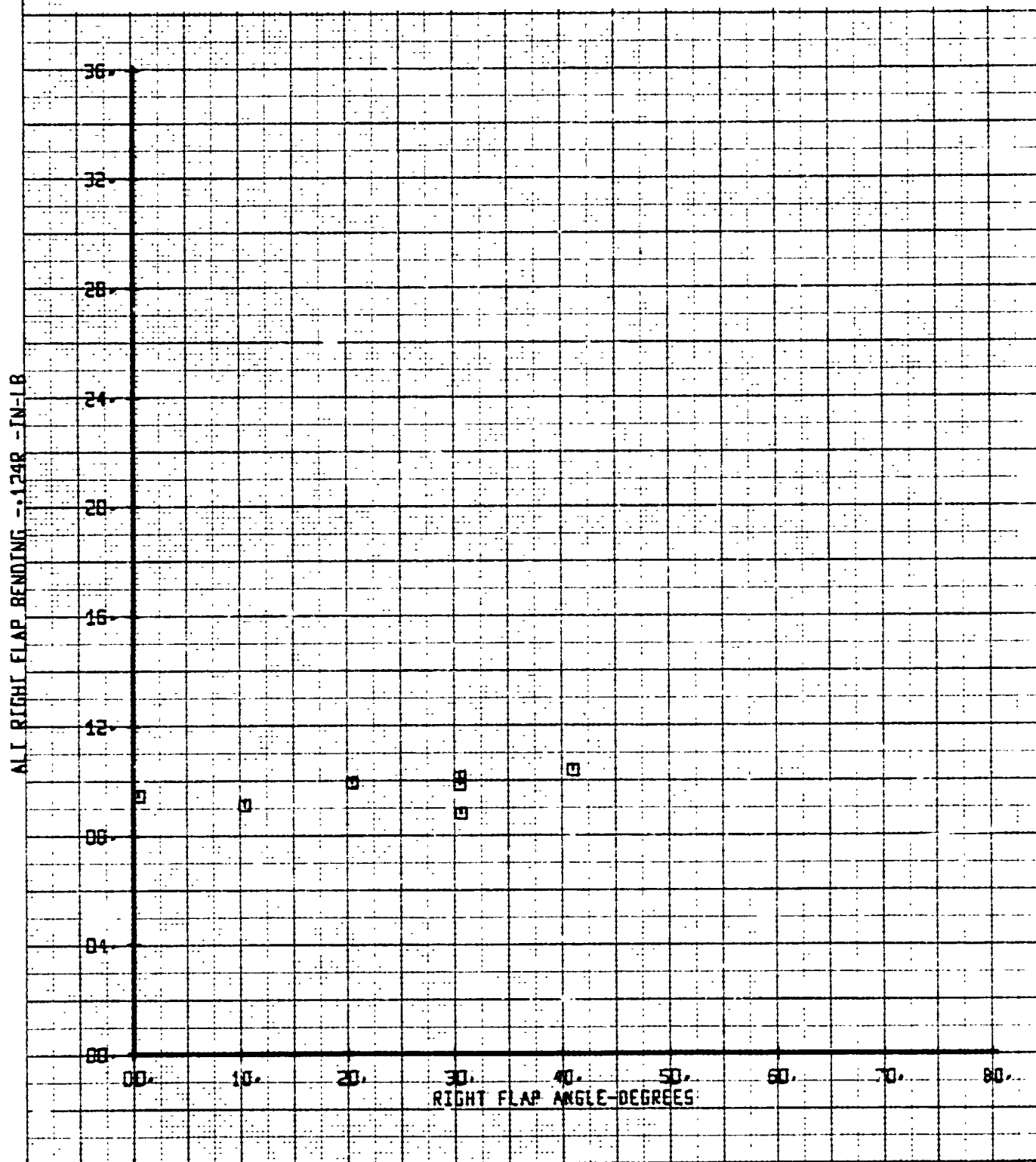


Figure 11-142. Alt. Right Chord Bending Versus Right Flap Angle
 ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.

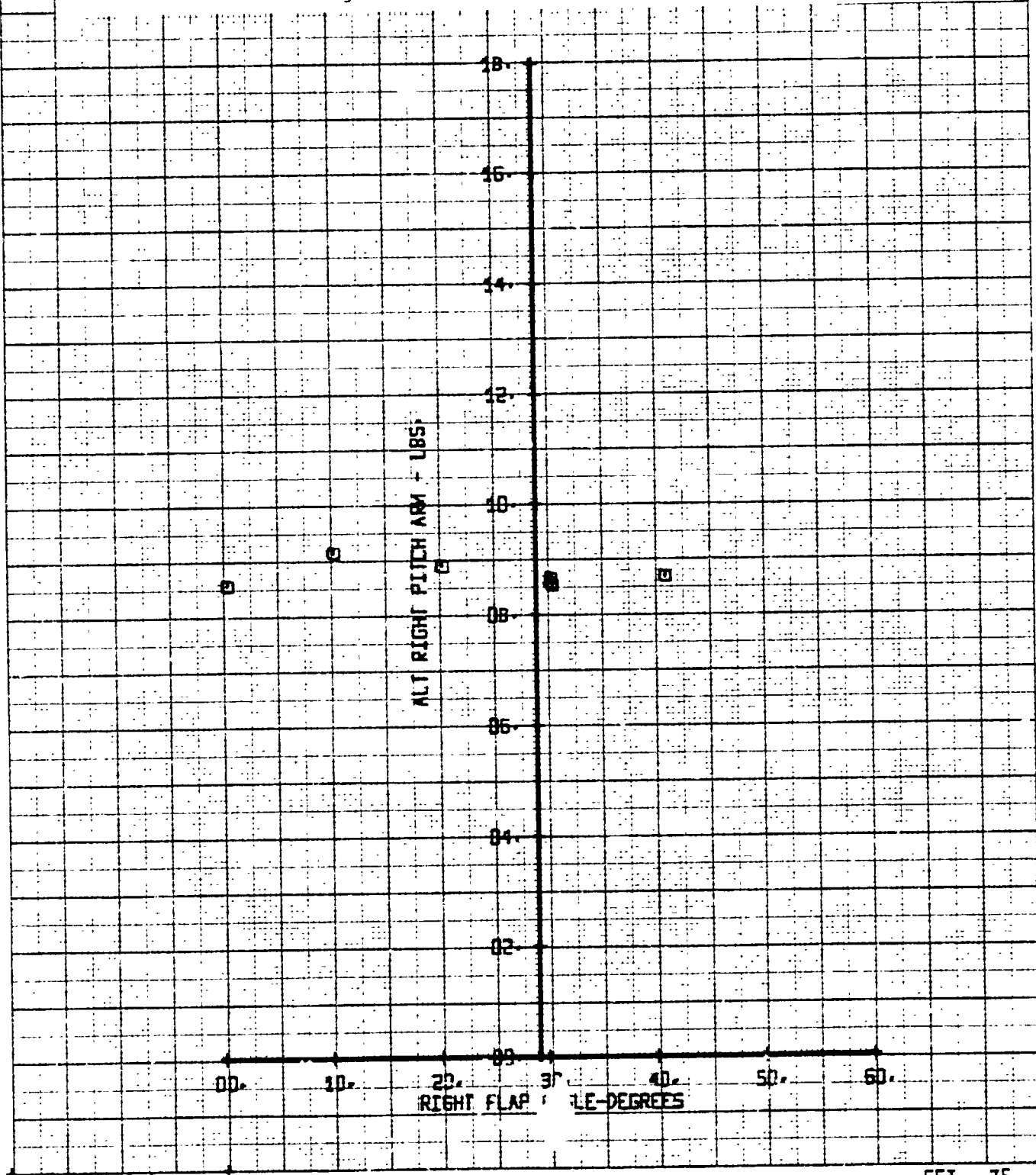
| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | VR0950-1 | LEGEND | | | | |
| LEFT ROTOR MODEL | | SYM | RUN | IN-MAC | KNOTS-E.S. | ALPHA-EUS |
| RIGHT ROTOR DATA | | 0 | 116 | 30 | 180 | -6 |
| | | | | | | FLAP VARY |

Figure 11-143. Alt. Right Flap Bending Versus Right Flap Angle
 ~ Degrees. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.



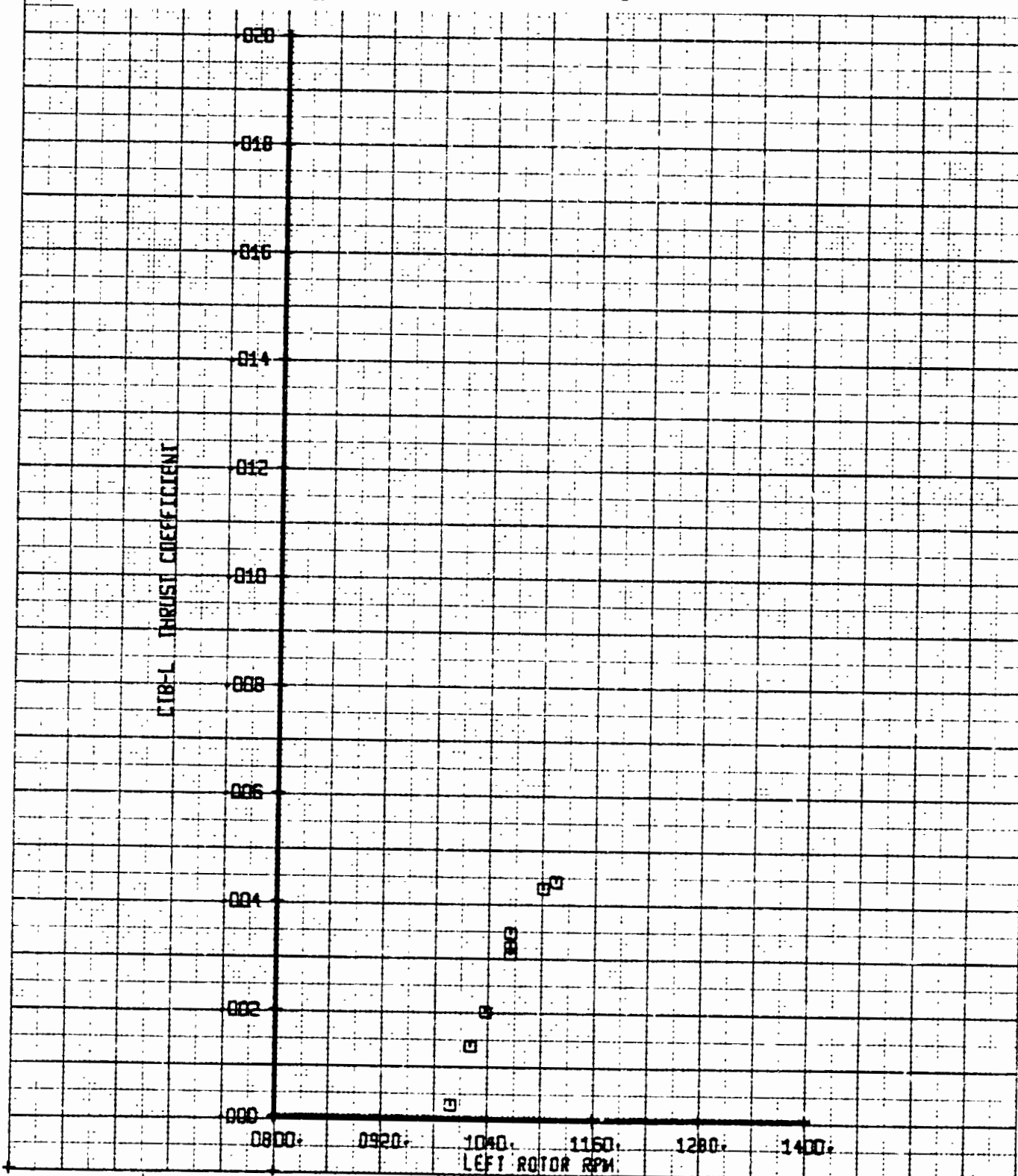
| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BYWT 182 | VRD950-1 | LEGEND | | | | |
| TILT ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-EUS |
| RIGHT ROTOR DATA | | 0 | 116 | 30 | 180 | -6 |
| | | | | | | FLAP VARY |

Figure 11-144. Alt. Right Pitch Link Load Versus Right Flap Angle
 ~ Degrees. IN = 30° Full Scale Airspeed 180 Knots.



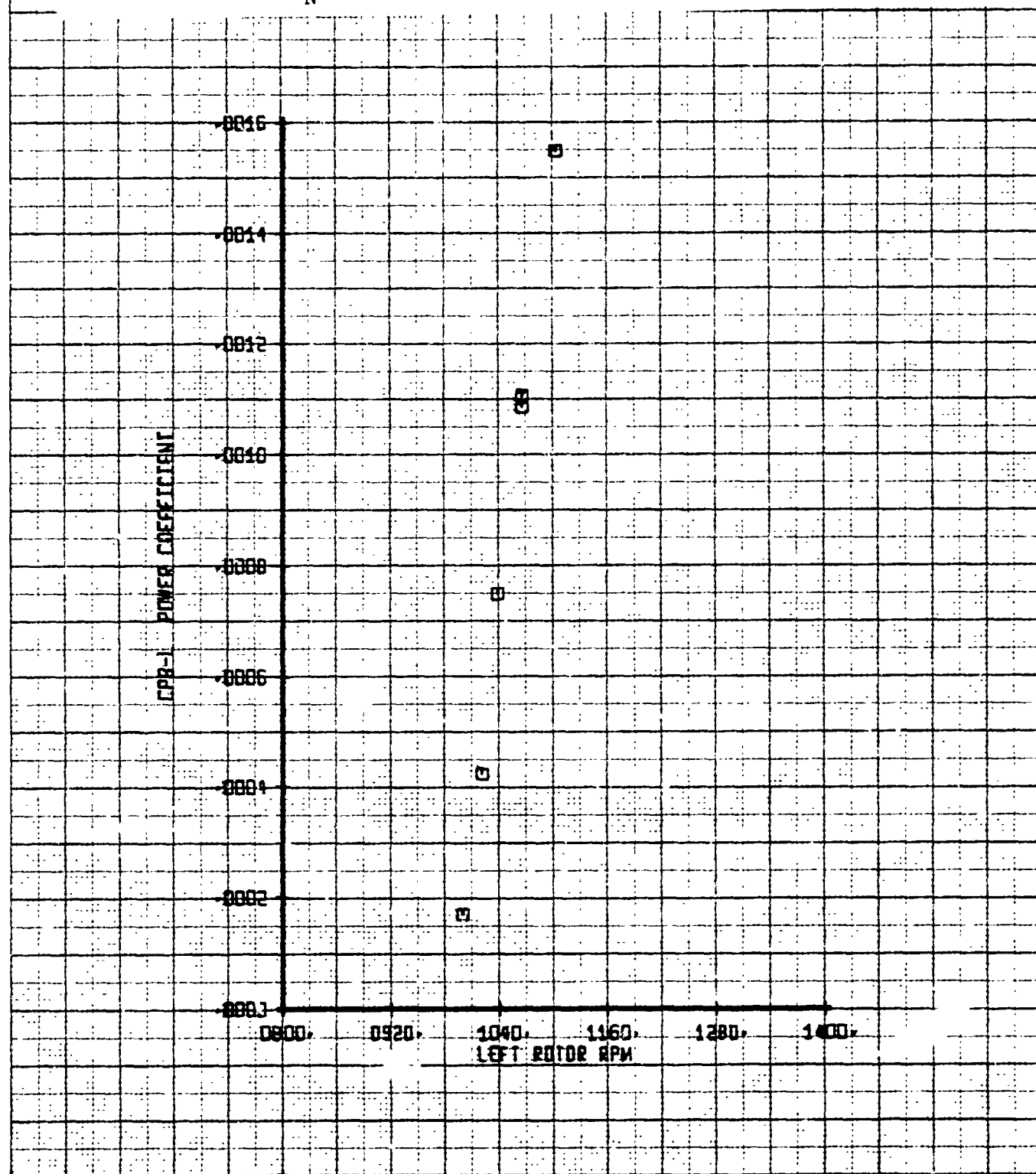
| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | VR0950-1 | LEGEND | | | | |
| TILT ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-DEG |
| LEFT ROTOR DATA | | 3 | 117 | 30 | 180 | -6 |
| | | | | | | FLAP 31 |

Figure 11-145. Left Rotor Thrust Coefficient Versus Rotor RPM.
 $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.



| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | YR0950-1 | LEGEND | | | | |
| LEFT ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FUS |
| LEFT ROTOR DATA | | □ | 117 | 30 | 180 | -6 |
| | | | | | | FLAP 31 |

Figure 11-146. Left Rotor Power Coefficient Versus Rotor RPM.
 $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.



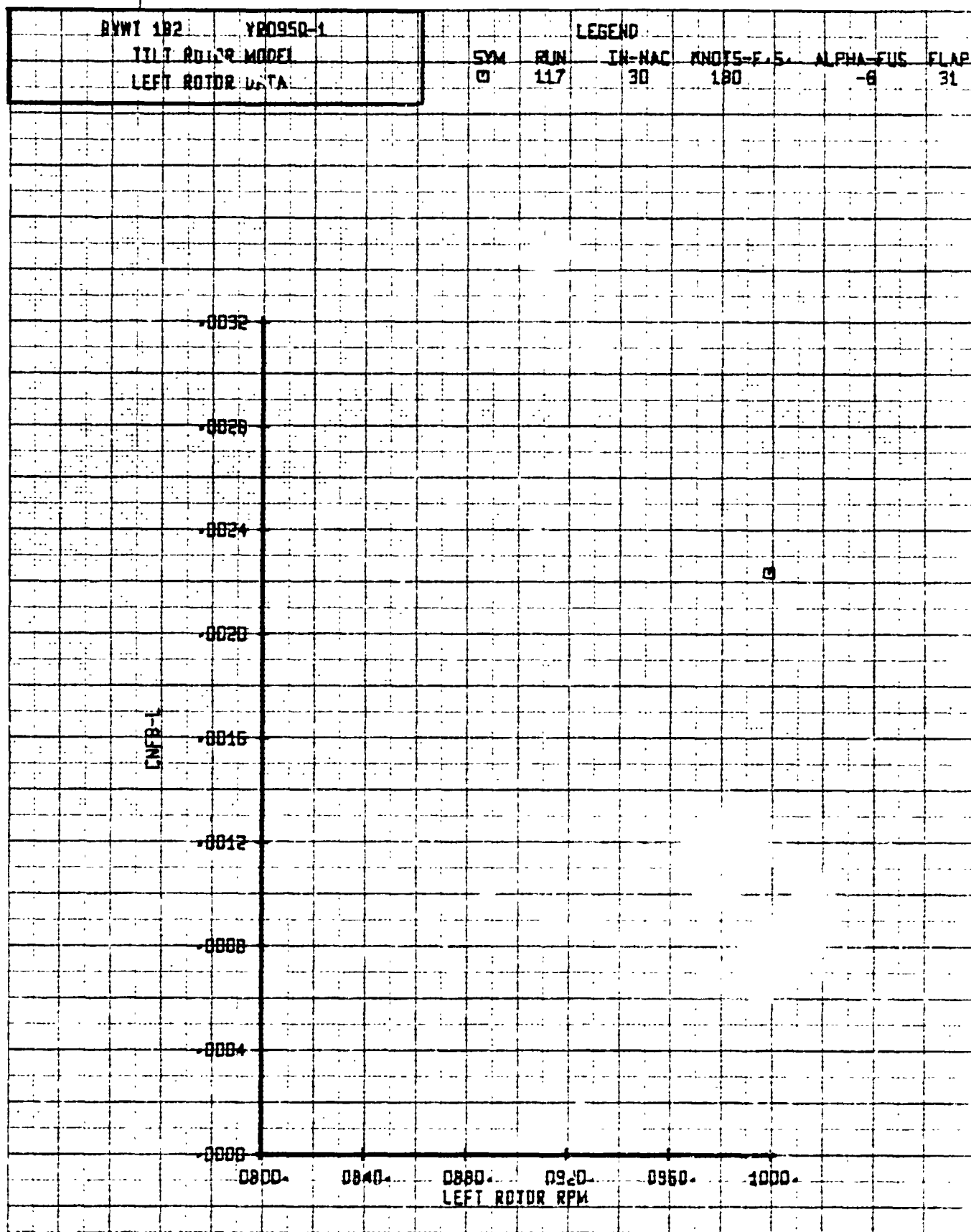
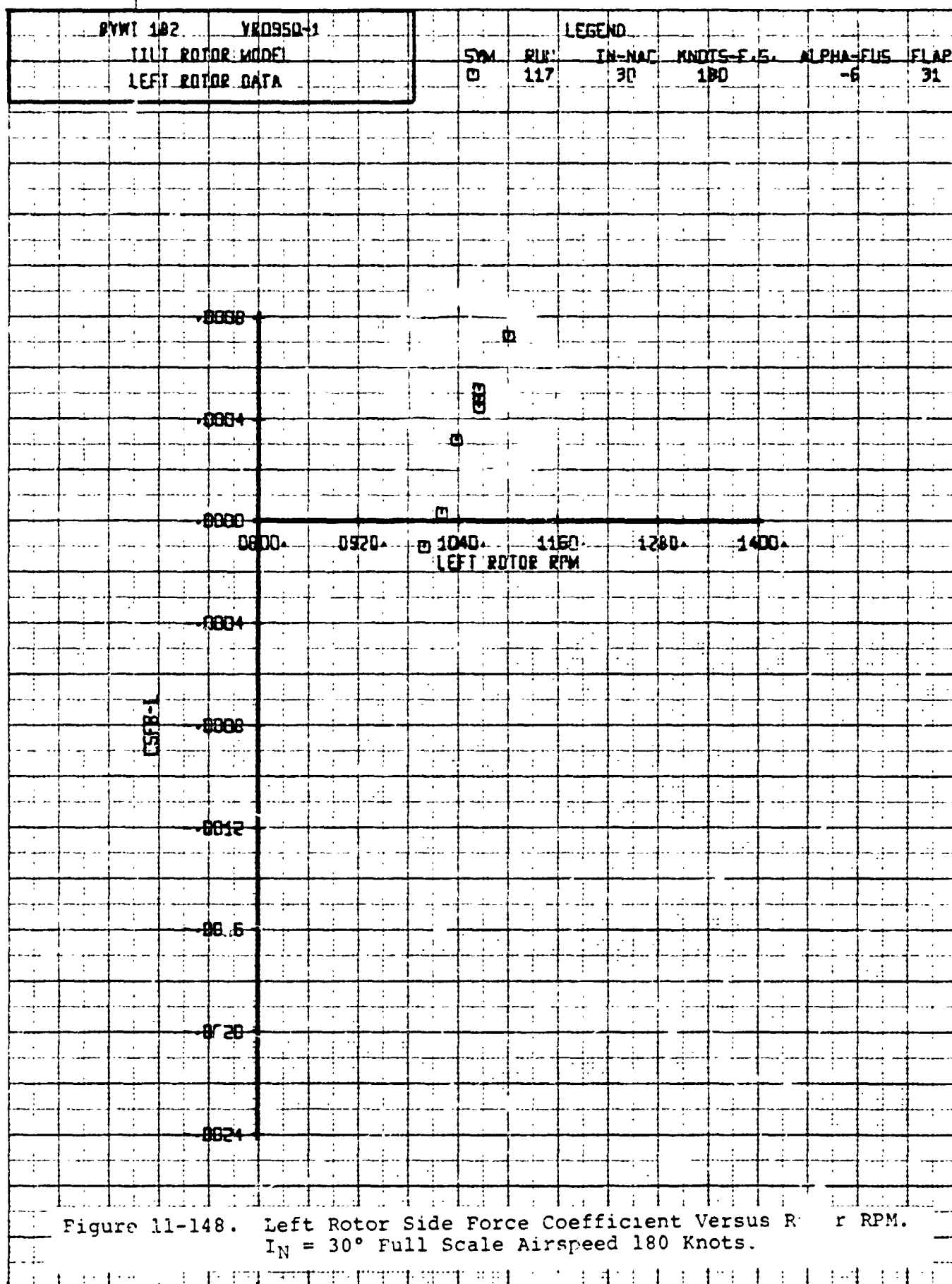
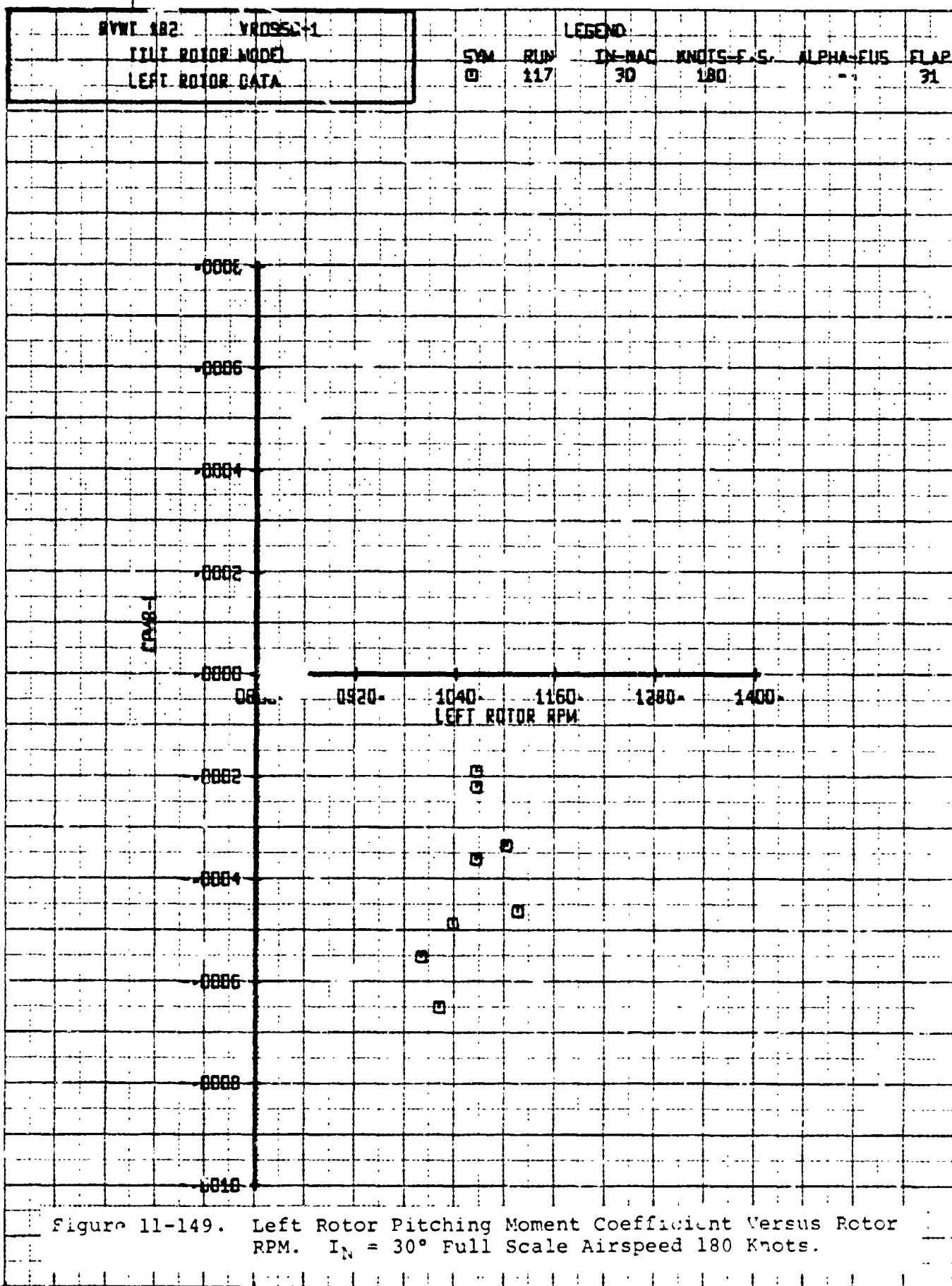
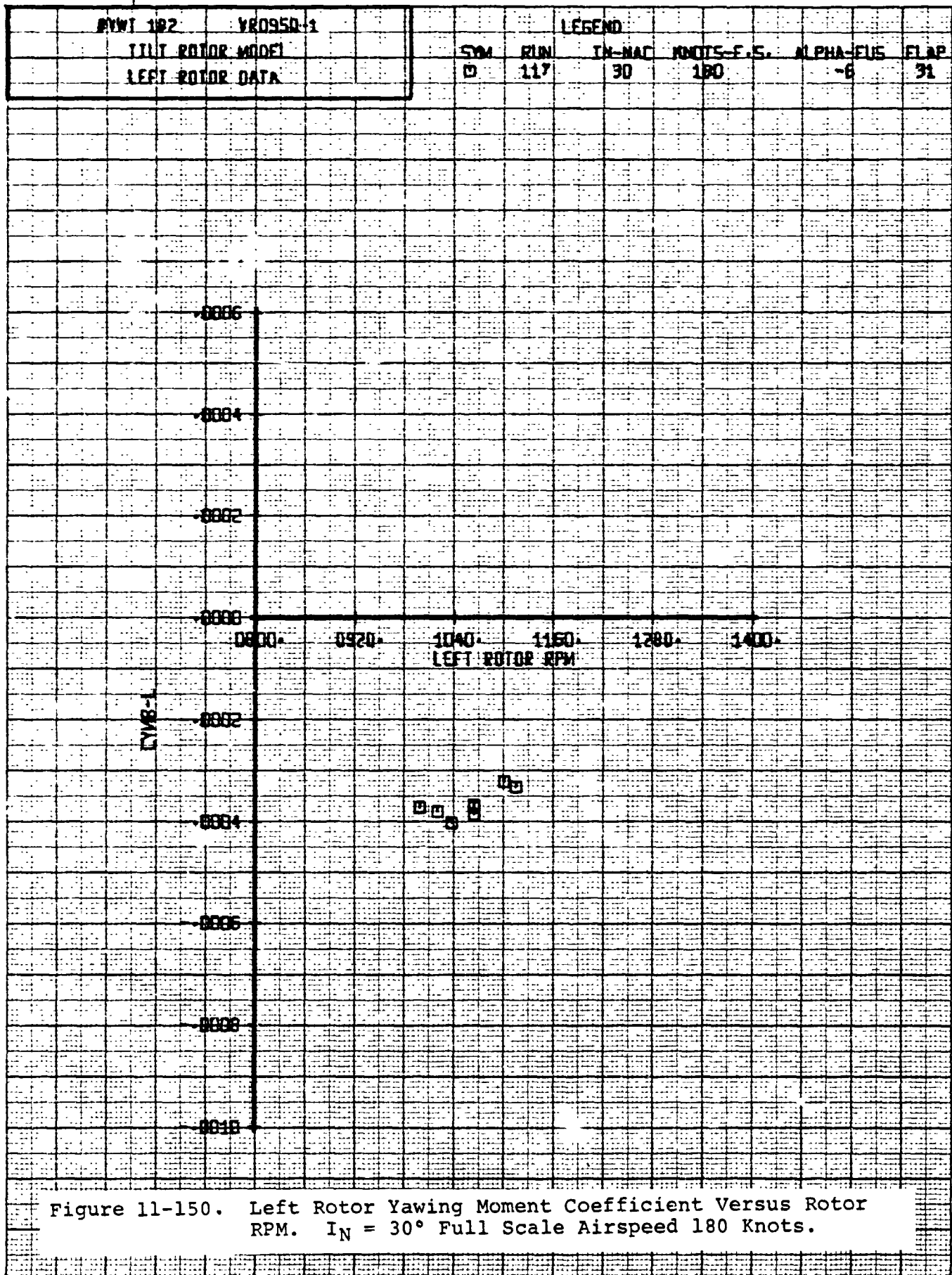


Figure 11-147. Left Rotor Normal Force Coefficient Versus Rotor RPM. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.

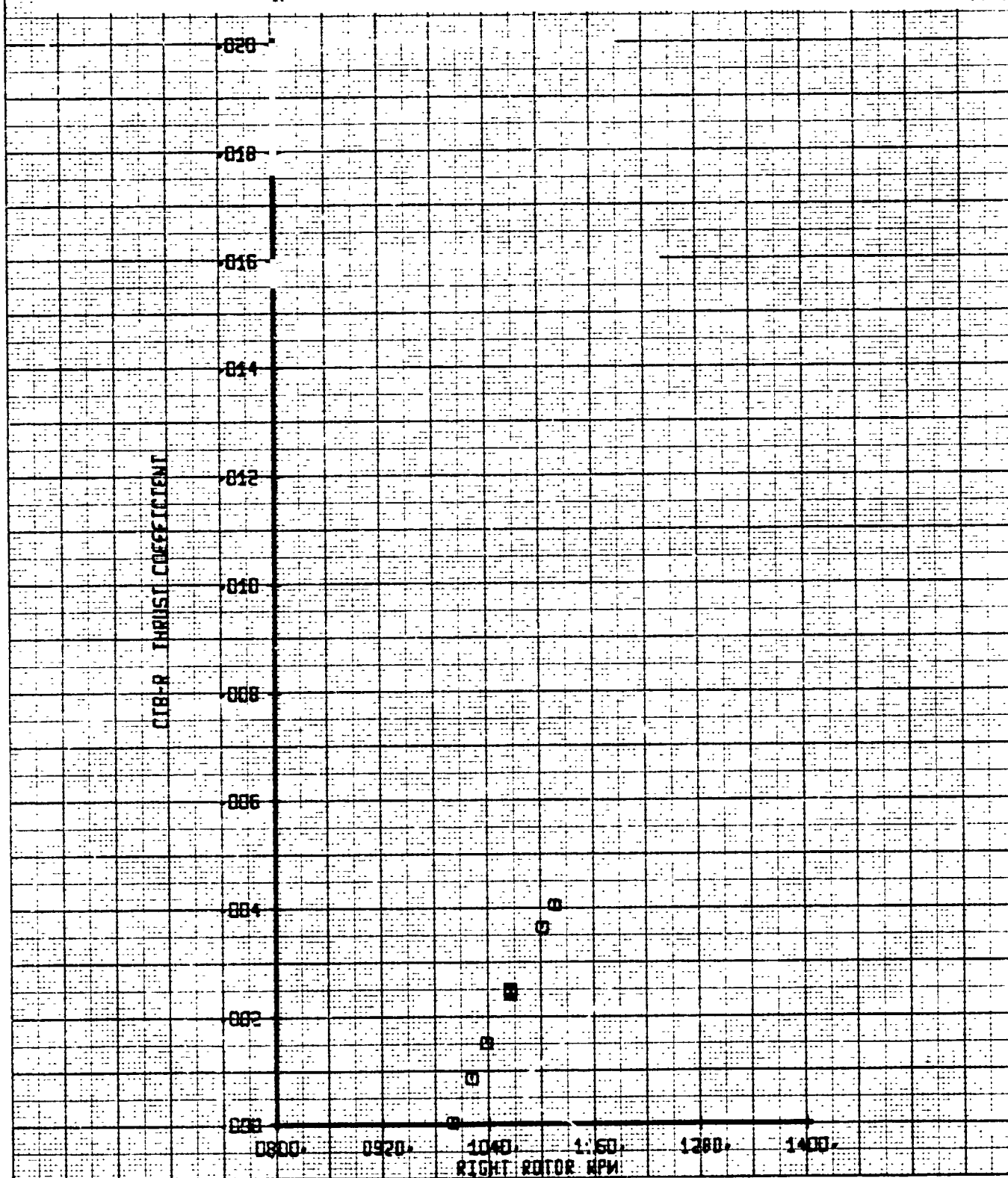






| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | VR0950-1 | LEGEND | | | | |
| TILT ROTOR MODE | | SYM | RUN | IN-MAC | KNOTS-F.S. | ALPHA-FUS |
| RIGHT ROTOR DATA | | 0 | 117 | 30 | 180 | -6 |
| | | | | | | FLAP 31 |

Figure 11-151. Right Rotor Thrust Coefficient Versus Rotor RPM.
 $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.



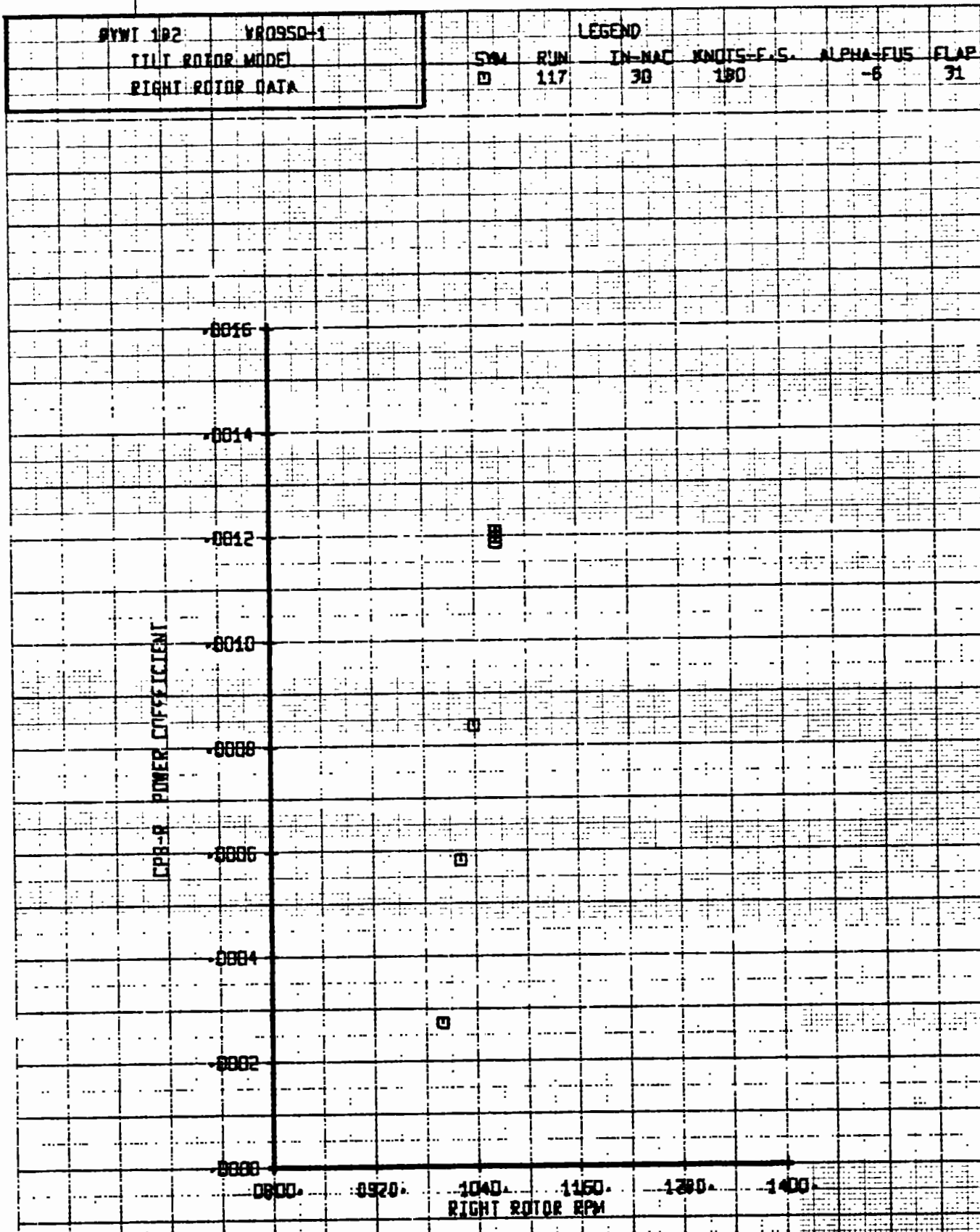


Figure 11-152. Right Rotor Power Coefficient Versus Rotor RPM.
 $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.

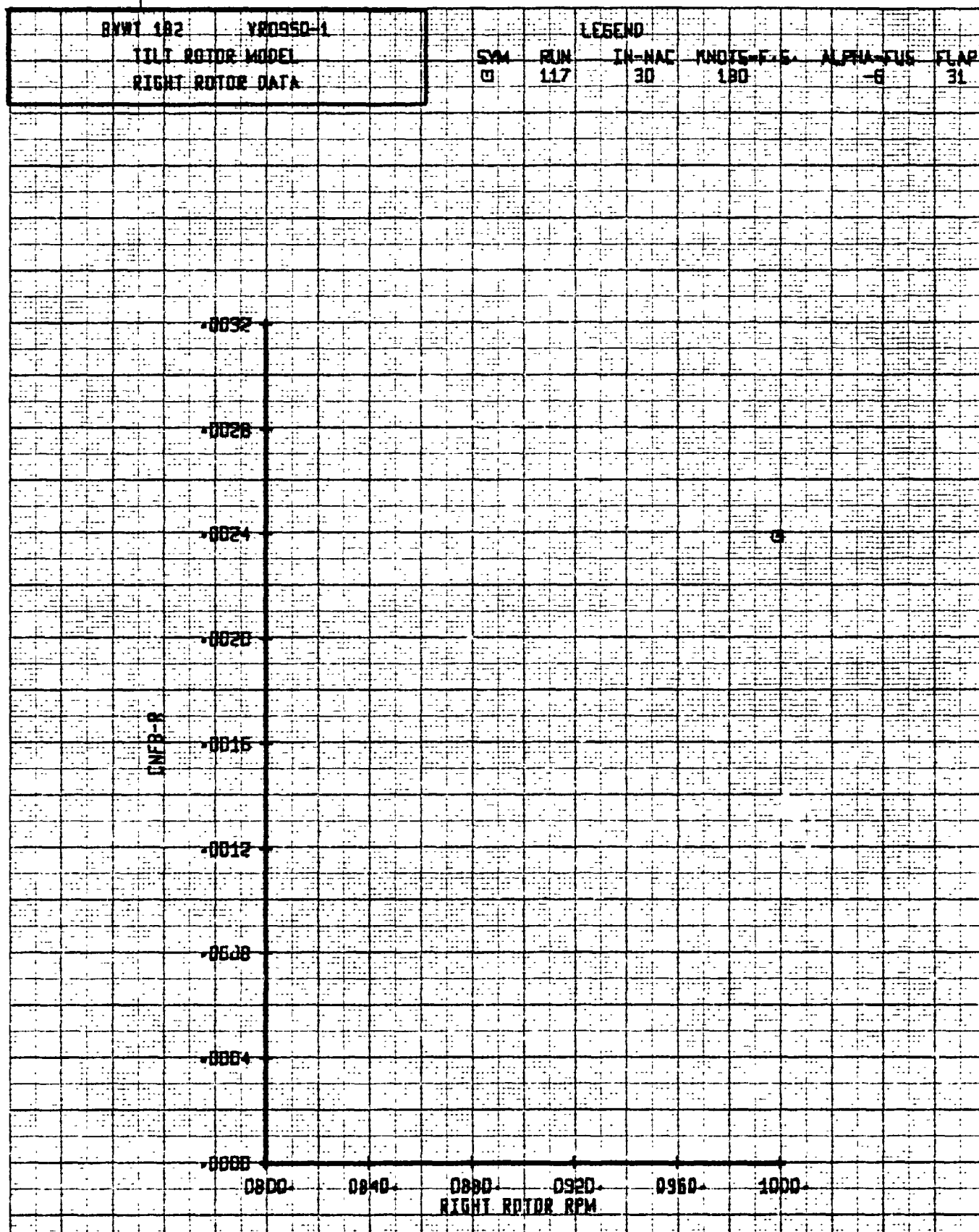


Figure 11-153. Right Rotor Normal Force Coefficient Versus Rotor RPM. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.

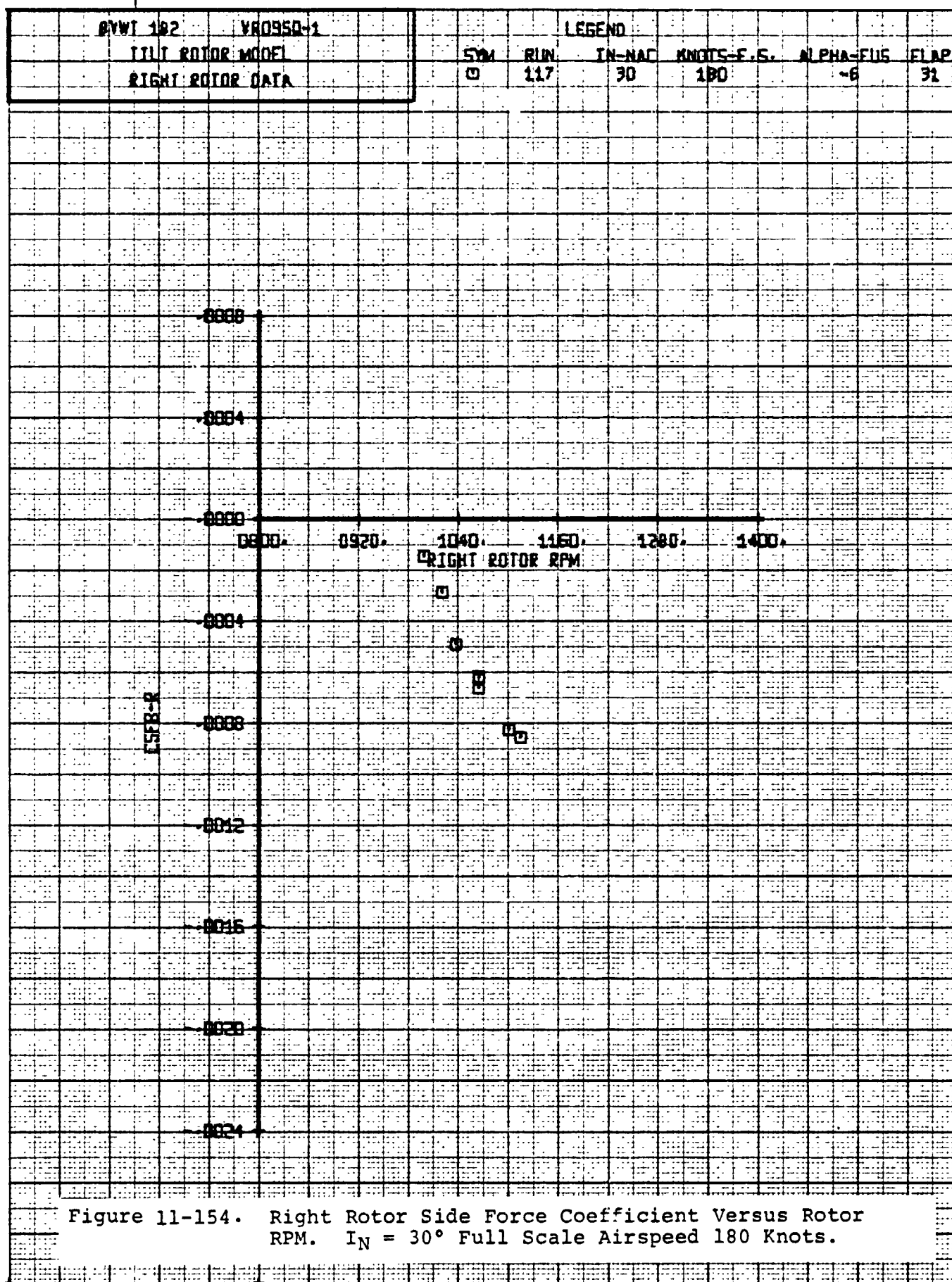


Figure 11-154. Right Rotor Side Force Coefficient Versus Rotor RPM. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.

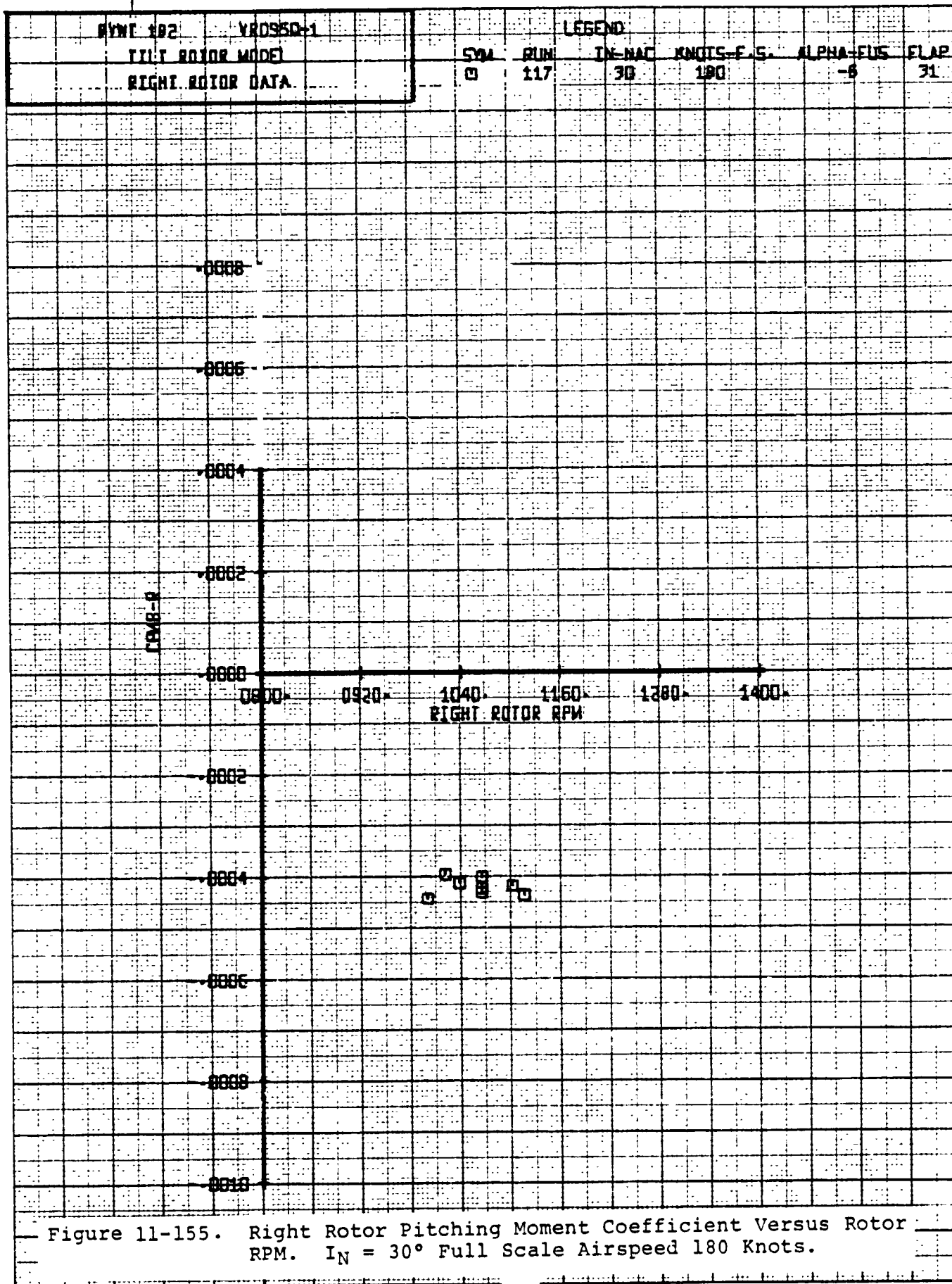
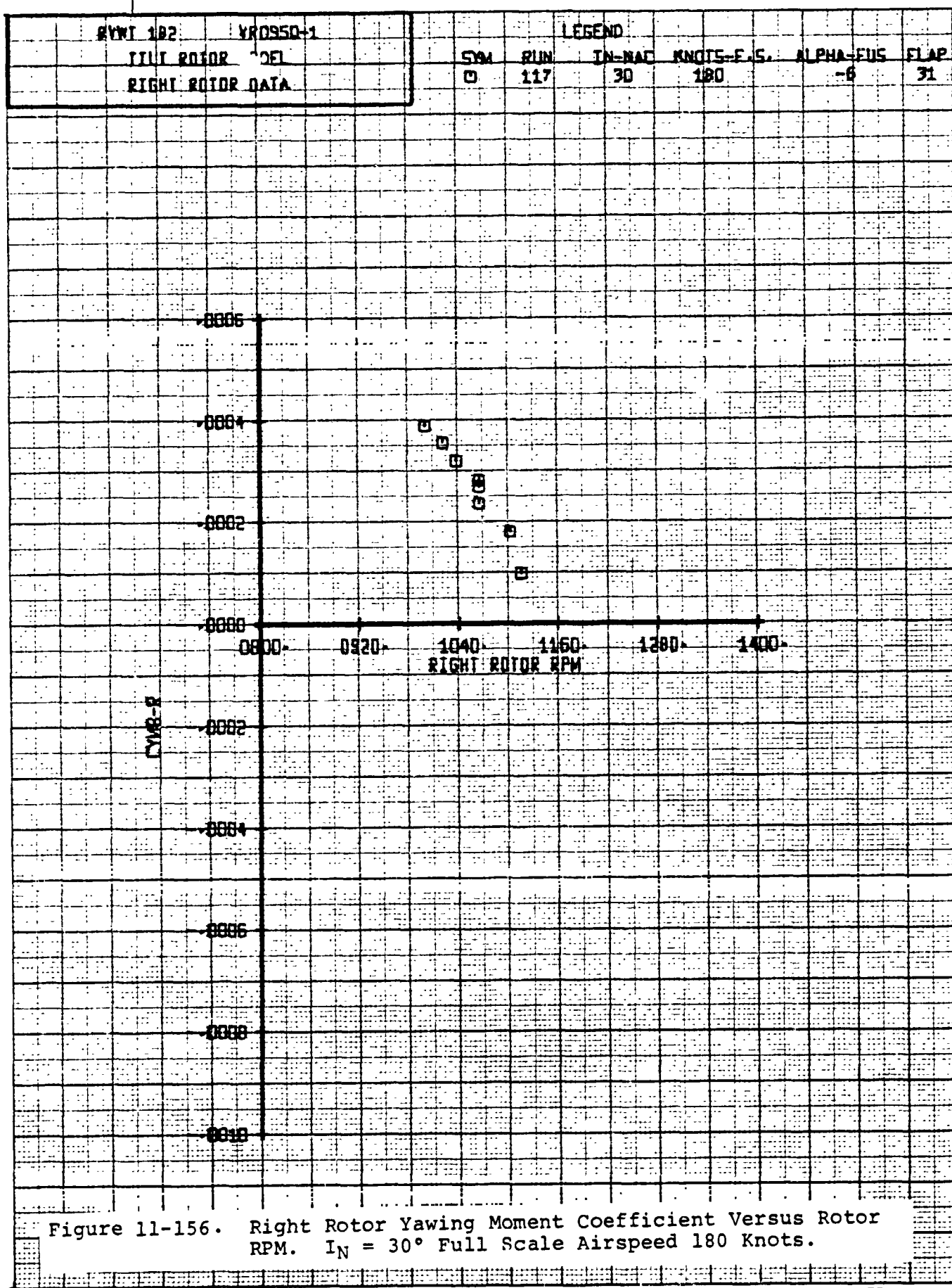
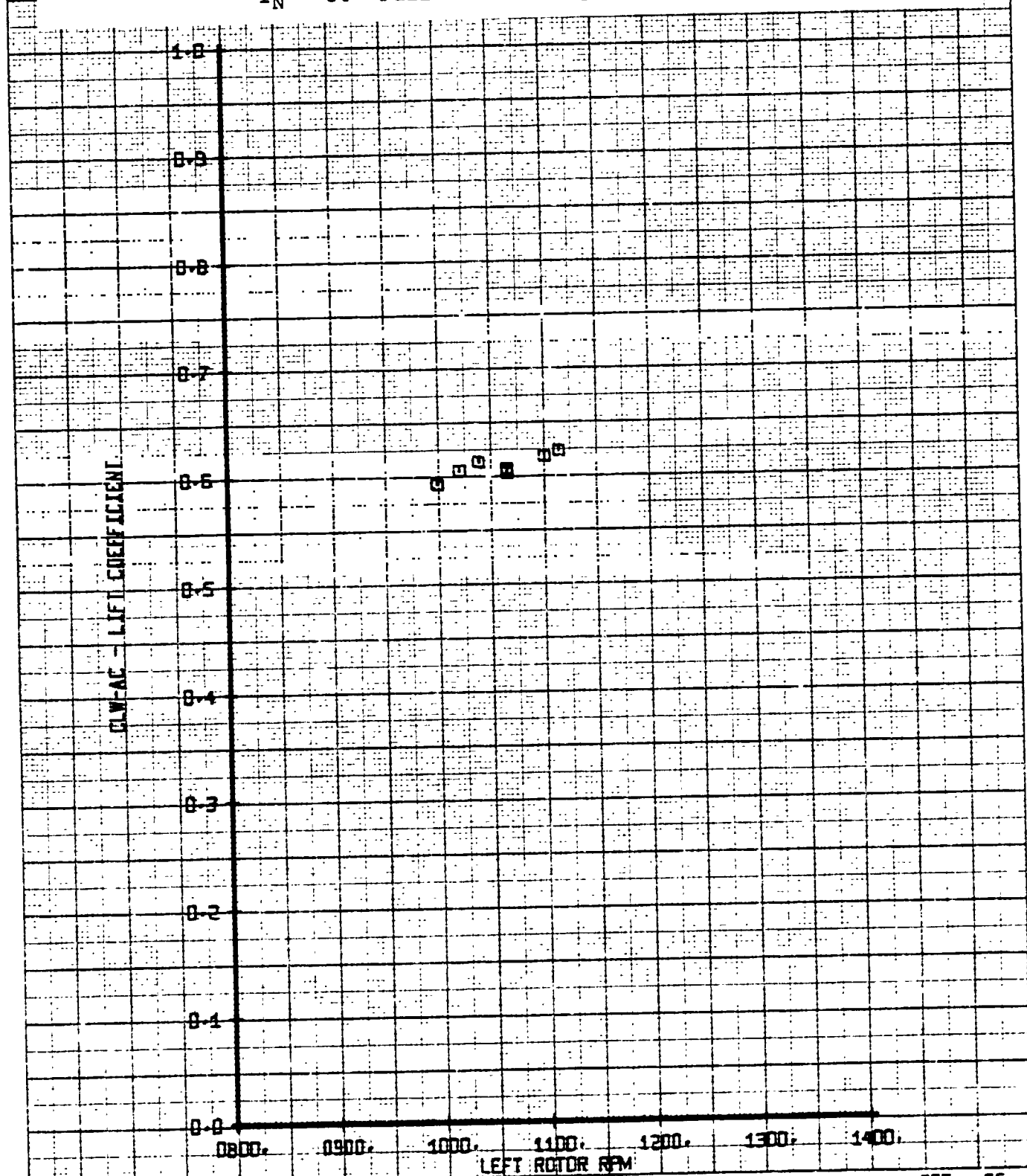


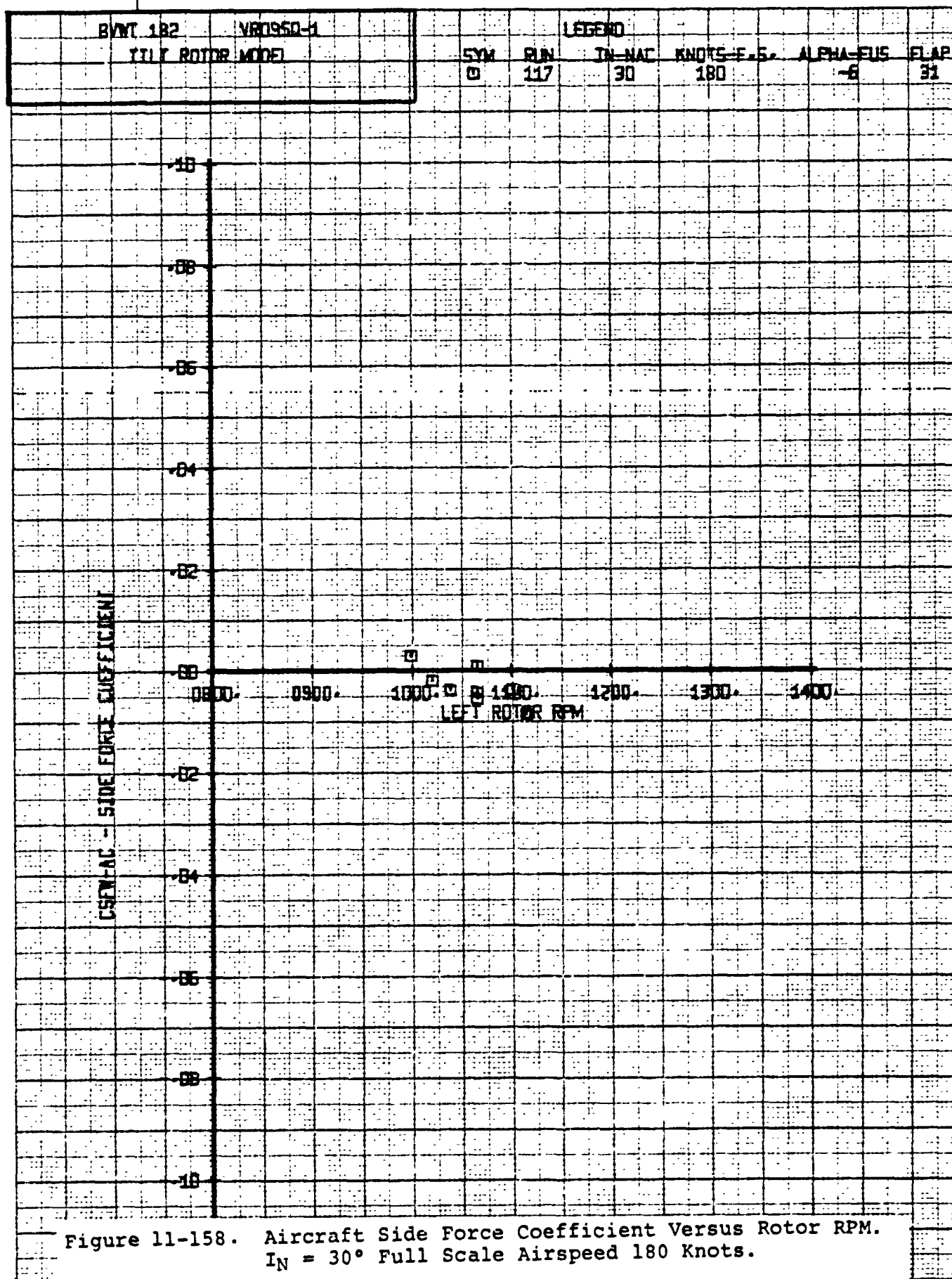
Figure 11-155. Right Rotor Pitching Moment Coefficient Versus Rotor RPM. $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.

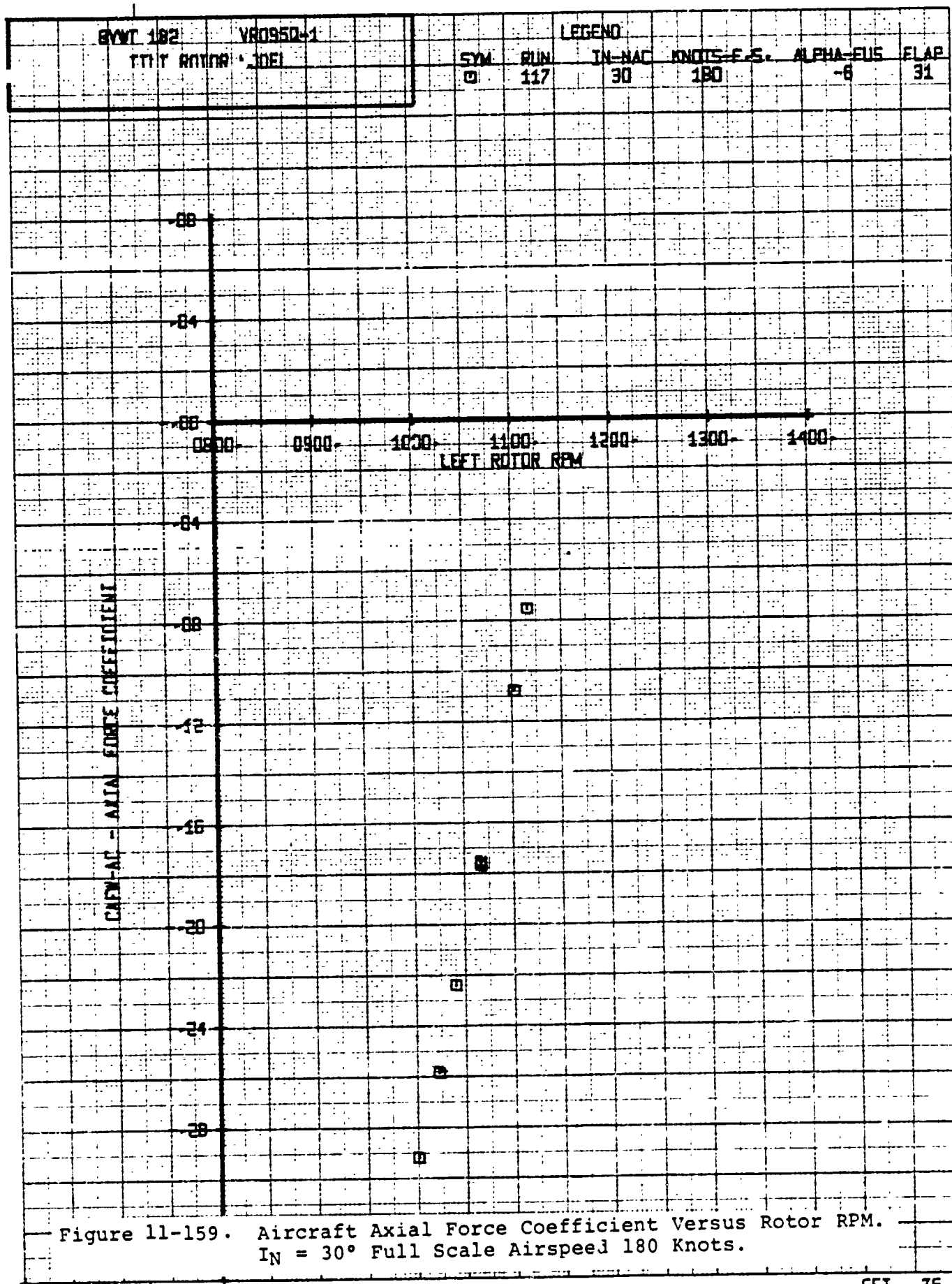


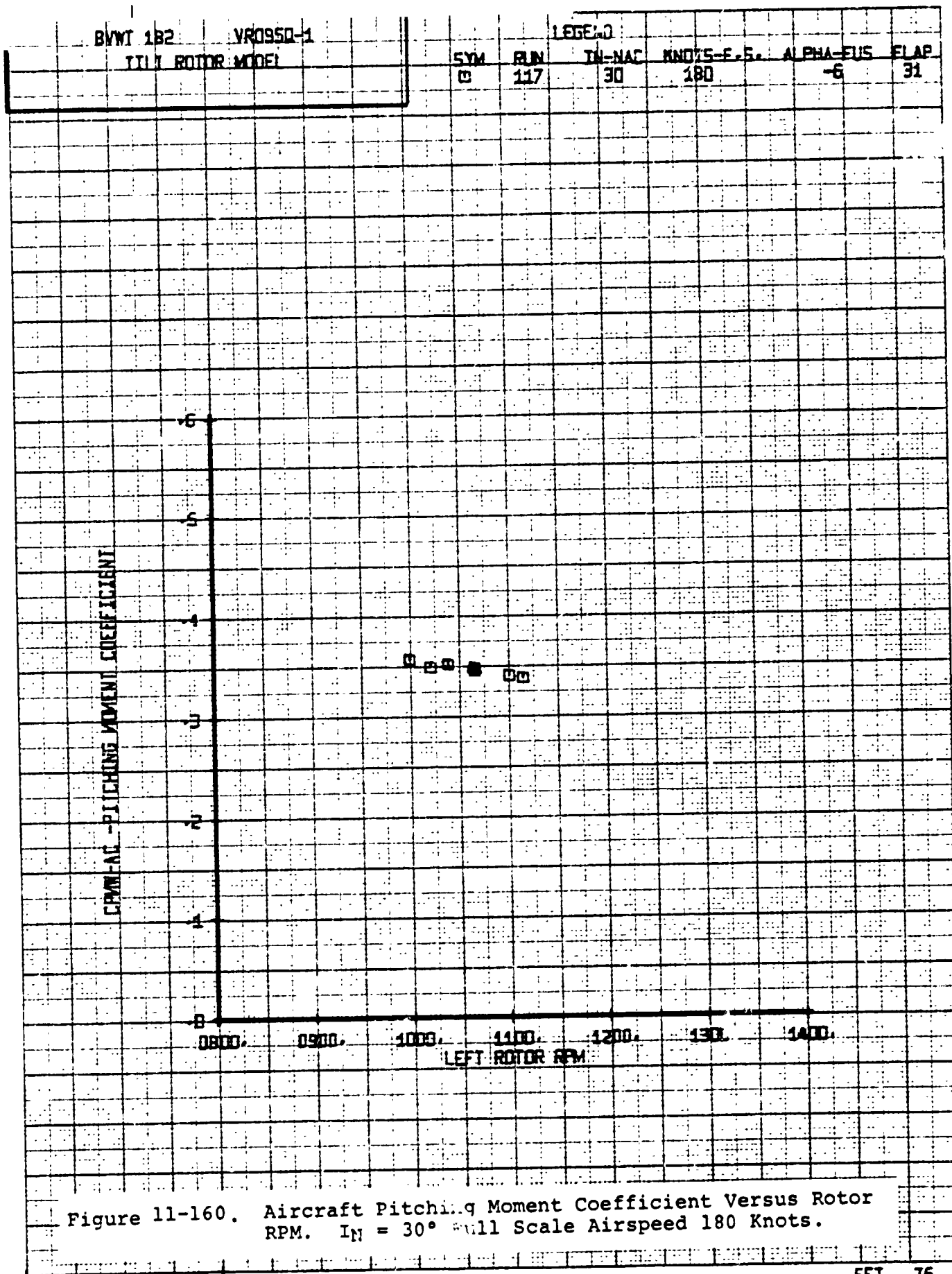
| | | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|------|
| BVWT 182 | VRO550-1 | LEGEND | | | | | |
| TILT ROTOR MODEL | | SYM | RPM | IN-NAC | KNOTS-F.S. | ALPHA-FUS | FLAP |
| | | □ | 117 | 30 | 180 | -6 | 31 |

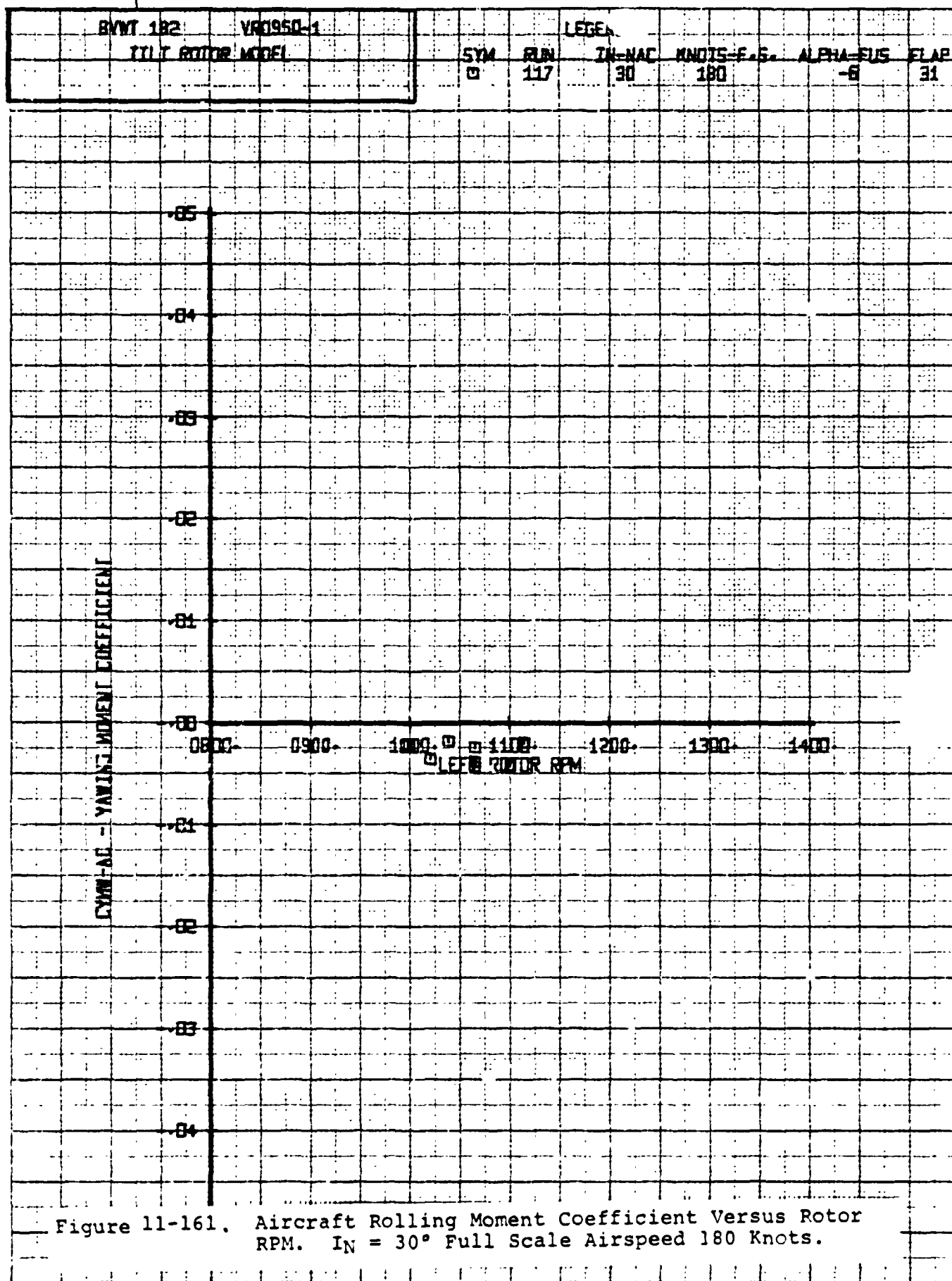
Figure 11-157. Aircraft Lift Coefficient Versus Rotor RPM.
 $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.

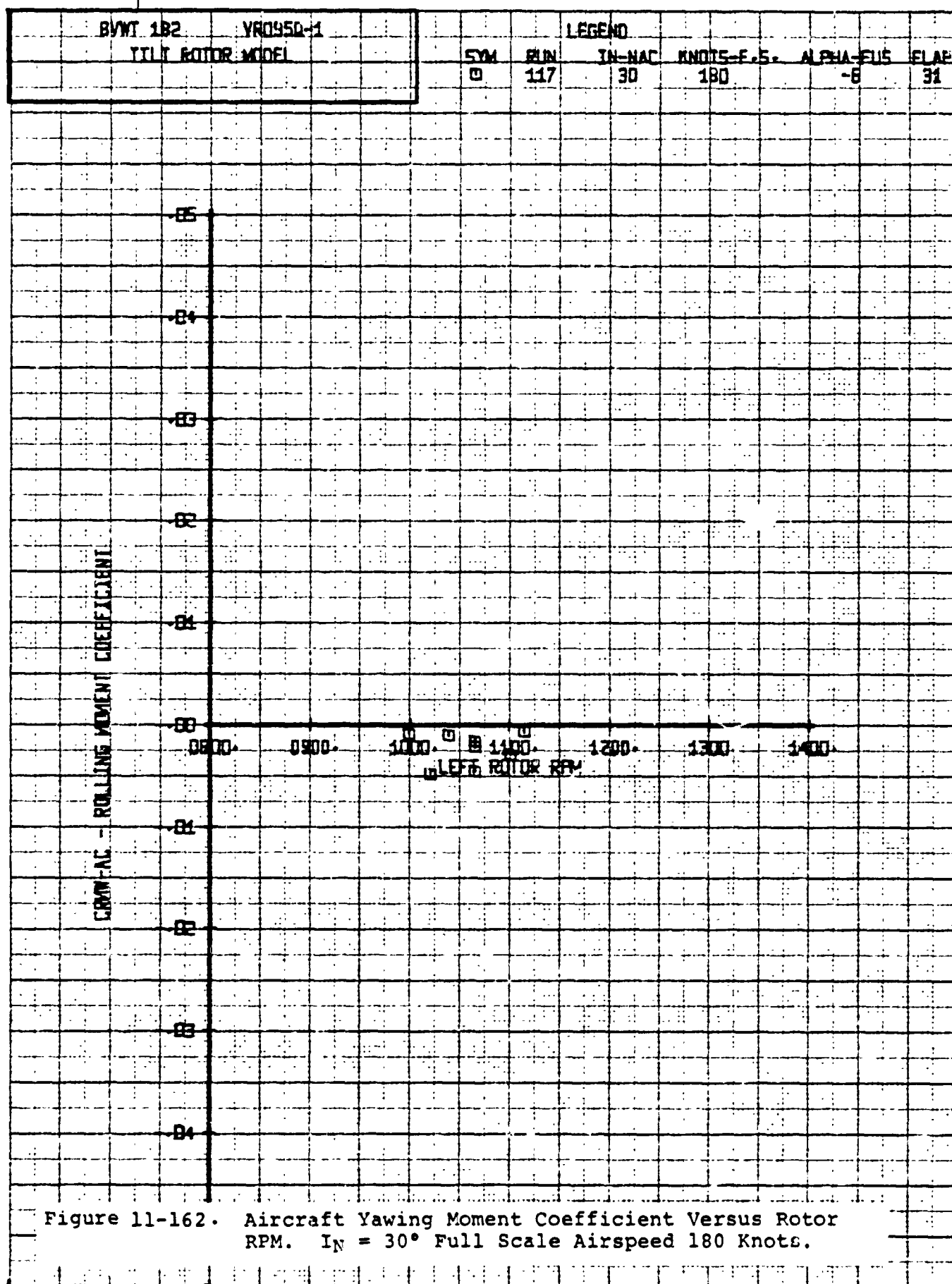


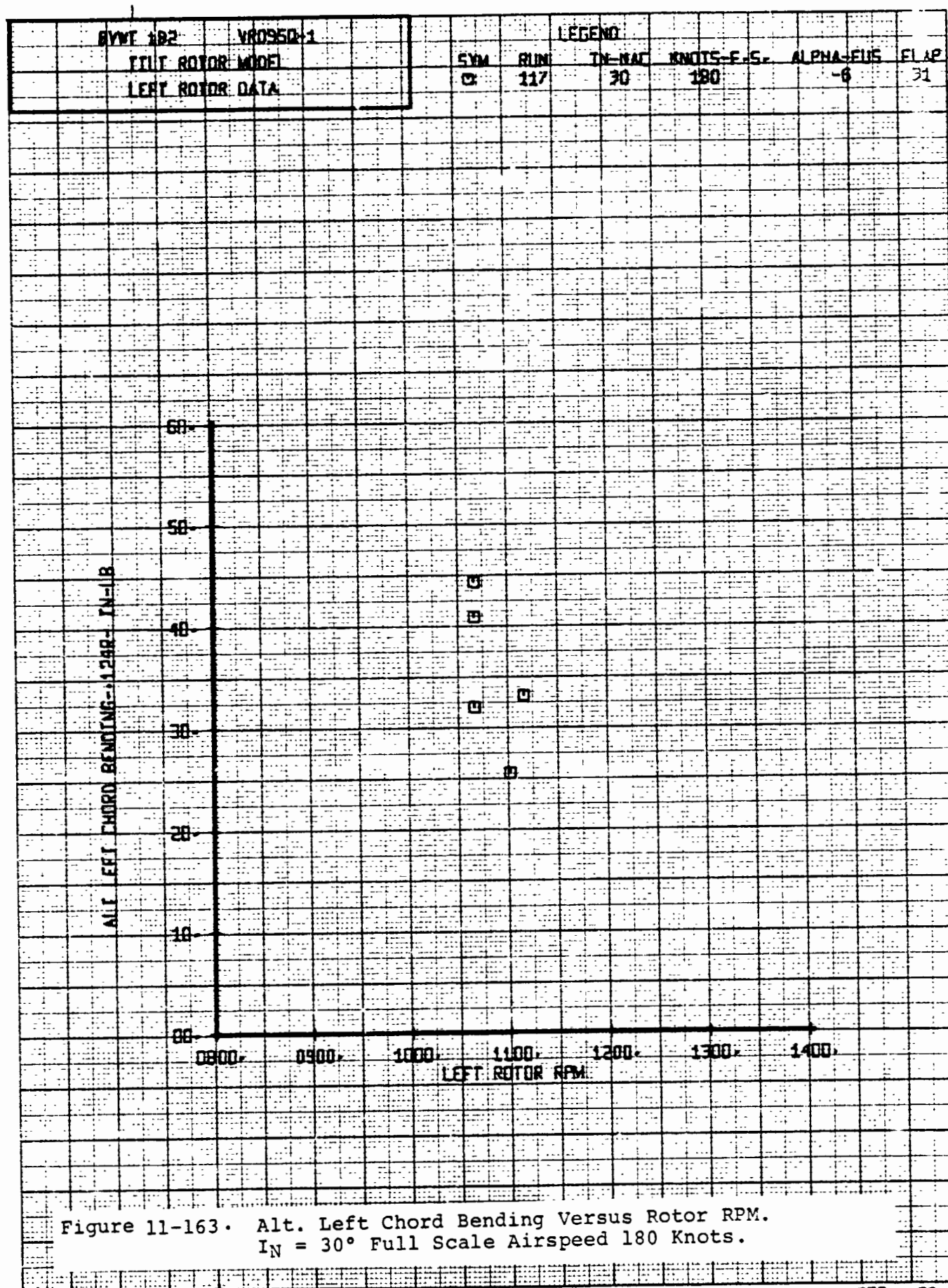


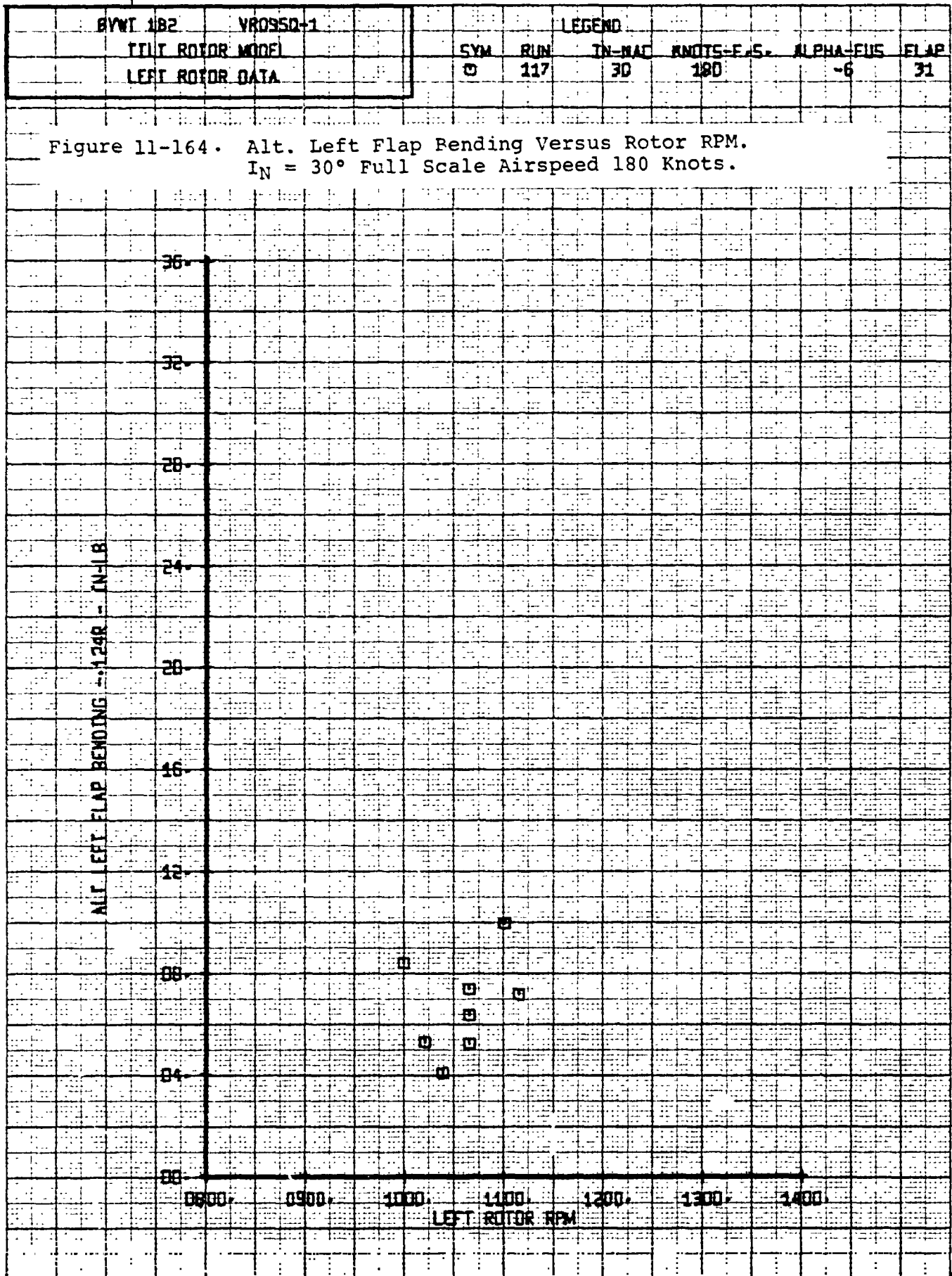


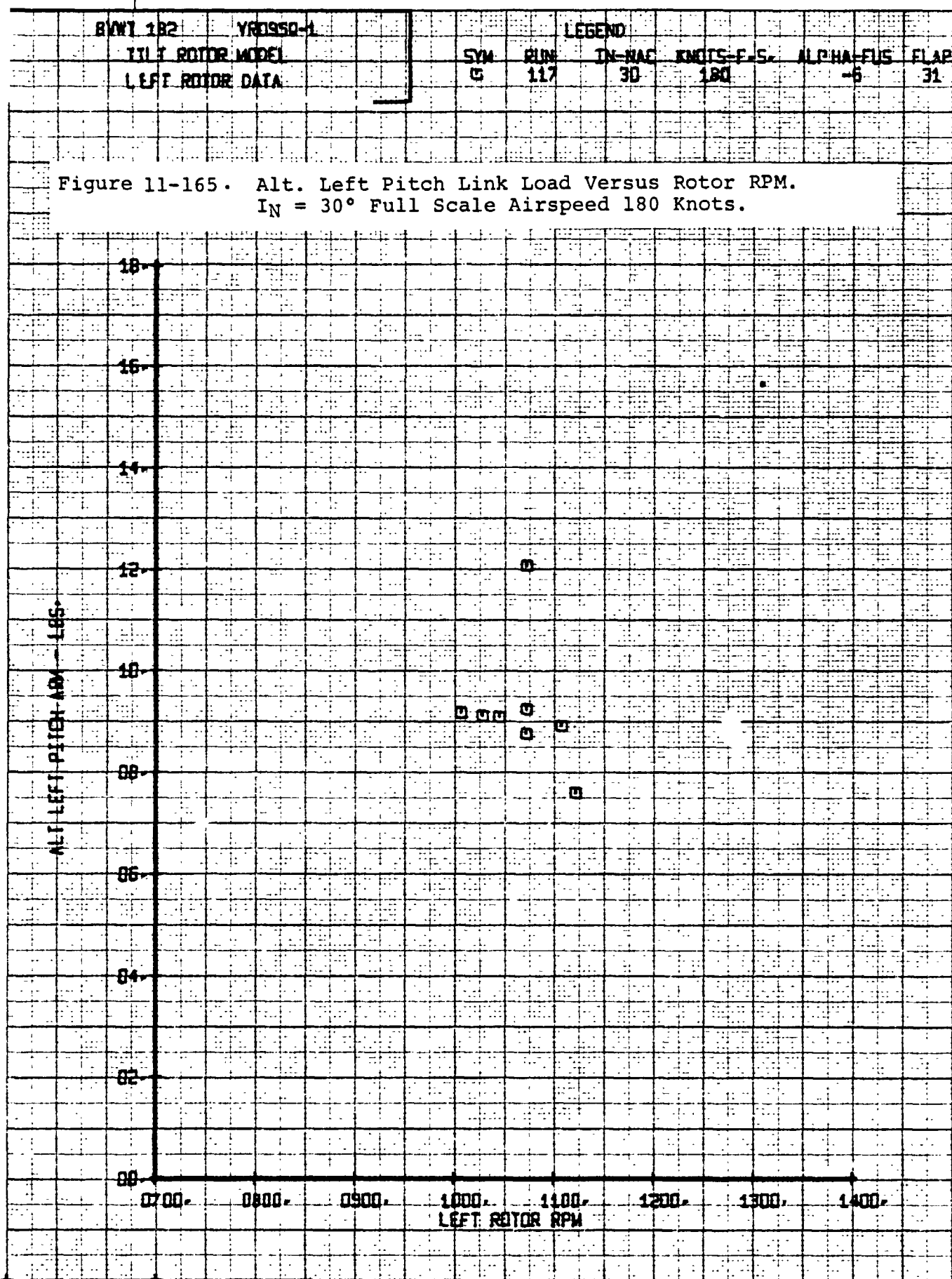












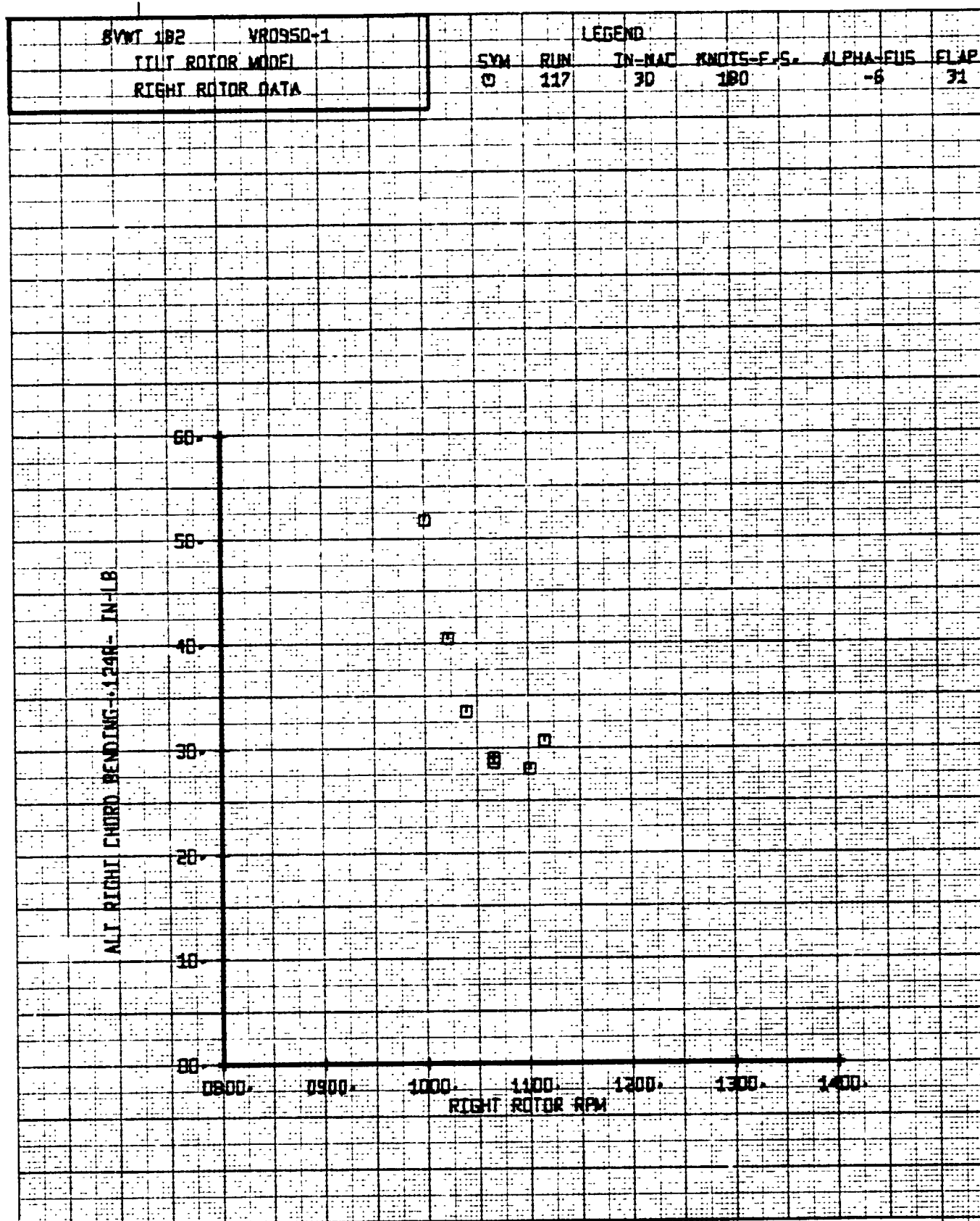
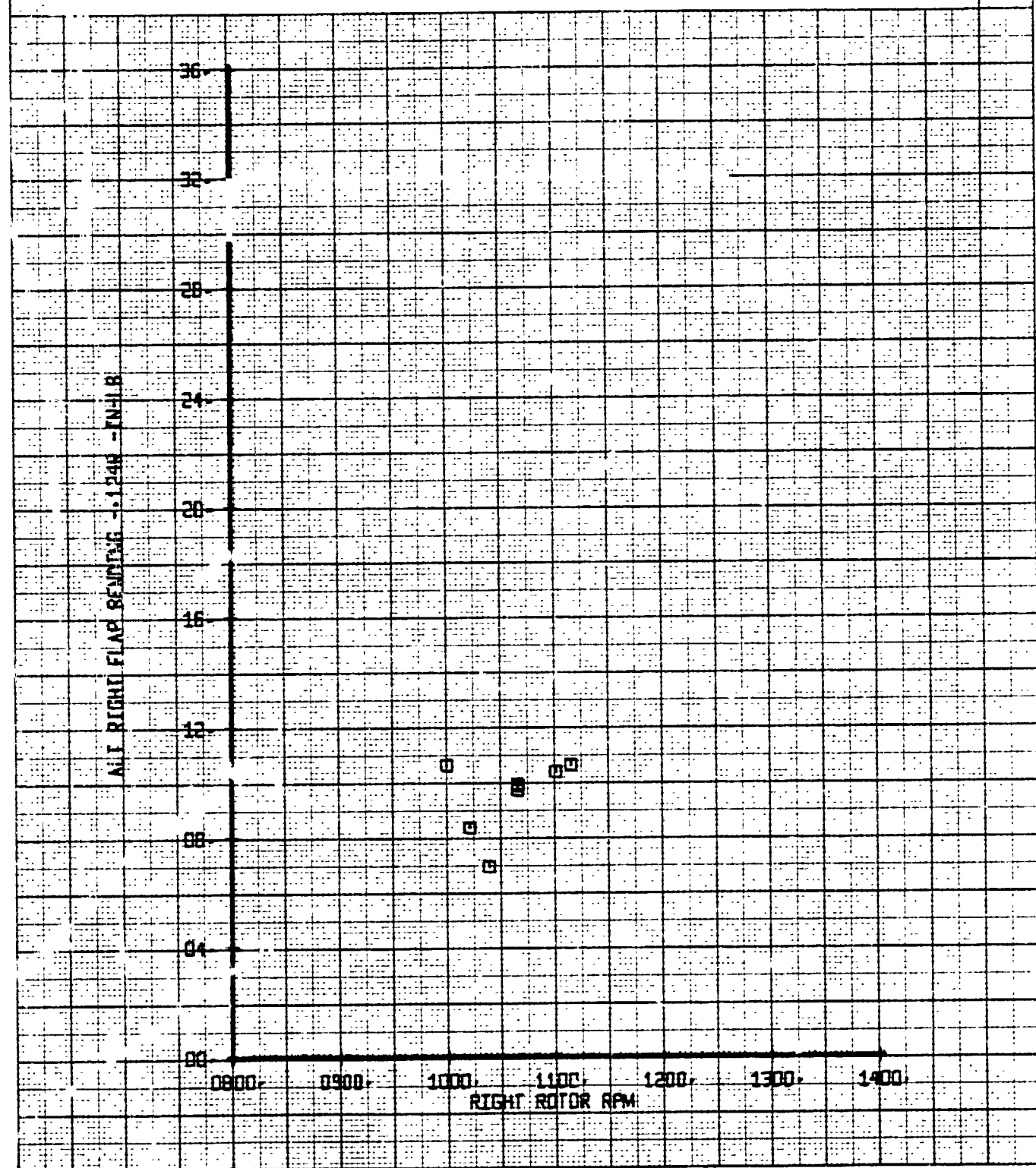


Figure 11-166. Alt. Right Chord Bending Versus Rotor RPM.
 IN = 30° Full Scale Airspeed 180 Knots.

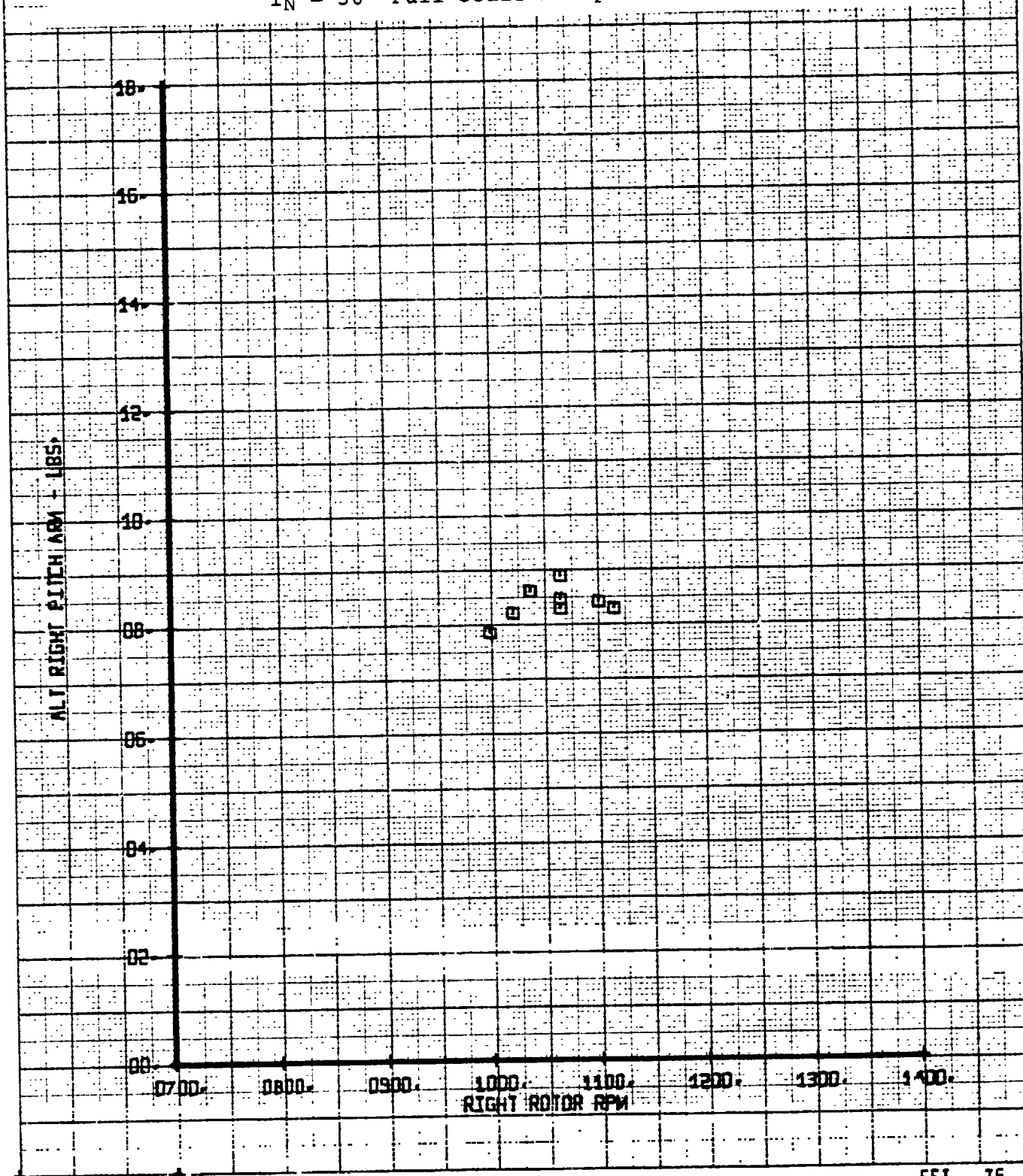
| | | | | | | | |
|------------------|--|----------|--|--------|--------|------------|-----------|
| BVWT 182 | | VRD950-1 | | LEGEND | | | |
| TILT ROTOR MODEL | | SYM | | RUN | IN-MAC | KNOTS-F.S. | ALPHA-EUS |
| RIGHT ROTOR DATA | | C | | 117 | 30 | 180 | -6 |
| | | | | | | | FLAP 31 |

Figure 11-167. Alt. Right Flap Bending Versus Rotor RPM.
 $I_N = 30^\circ$ Full Scale Airspeed 180 Knots.



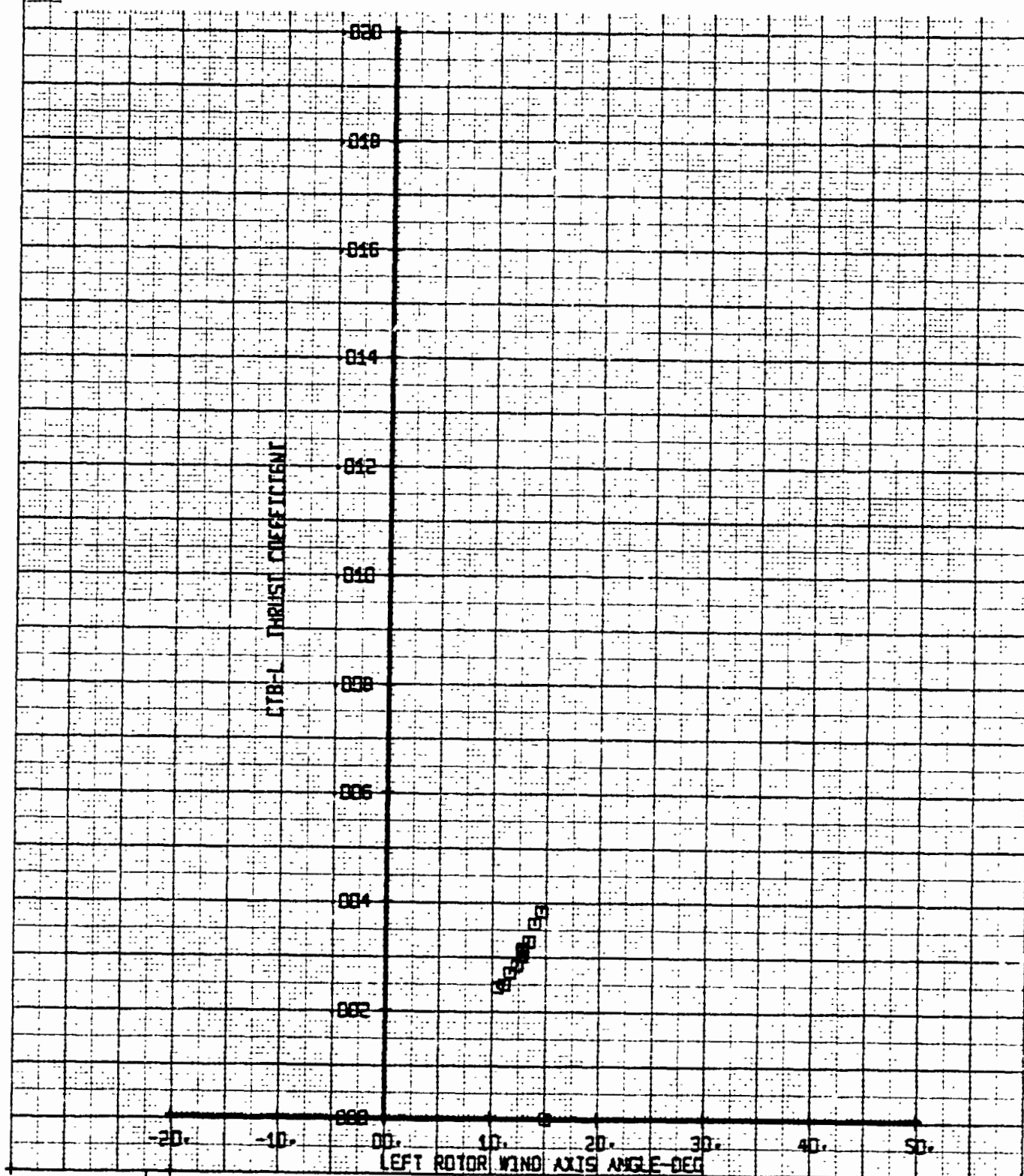
| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | VR0950-1 | LEGEND | | | | |
| LEFT ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FUS |
| RIGHT ROTOR DATA | | □ | 117 | 30 | 180 | -6 |
| | | | | | | 31 |

Figure 11-168. Alt. Right Pitch Link Load Versus Rotor RPM.
IN = 30° Full Scale Airspeed 180 Knots.



| | | | | | | | |
|------------------|----------|-----|-----|--------|------------|-----------|------|
| BYWT 182 | VR0950-1 | SYM | RUN | IN-NAC | KNOTS-E.S. | ALPHA-EUS | FLAP |
| LEFT ROTOR MODEL | | 0 | 118 | 15 | 180 | VARY | 20 |
| LEFT ROTOR DATA | | | | | | | |

Figure 12-001. Left Rotor Thrust Coefficient Versus Angle of Attack. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.



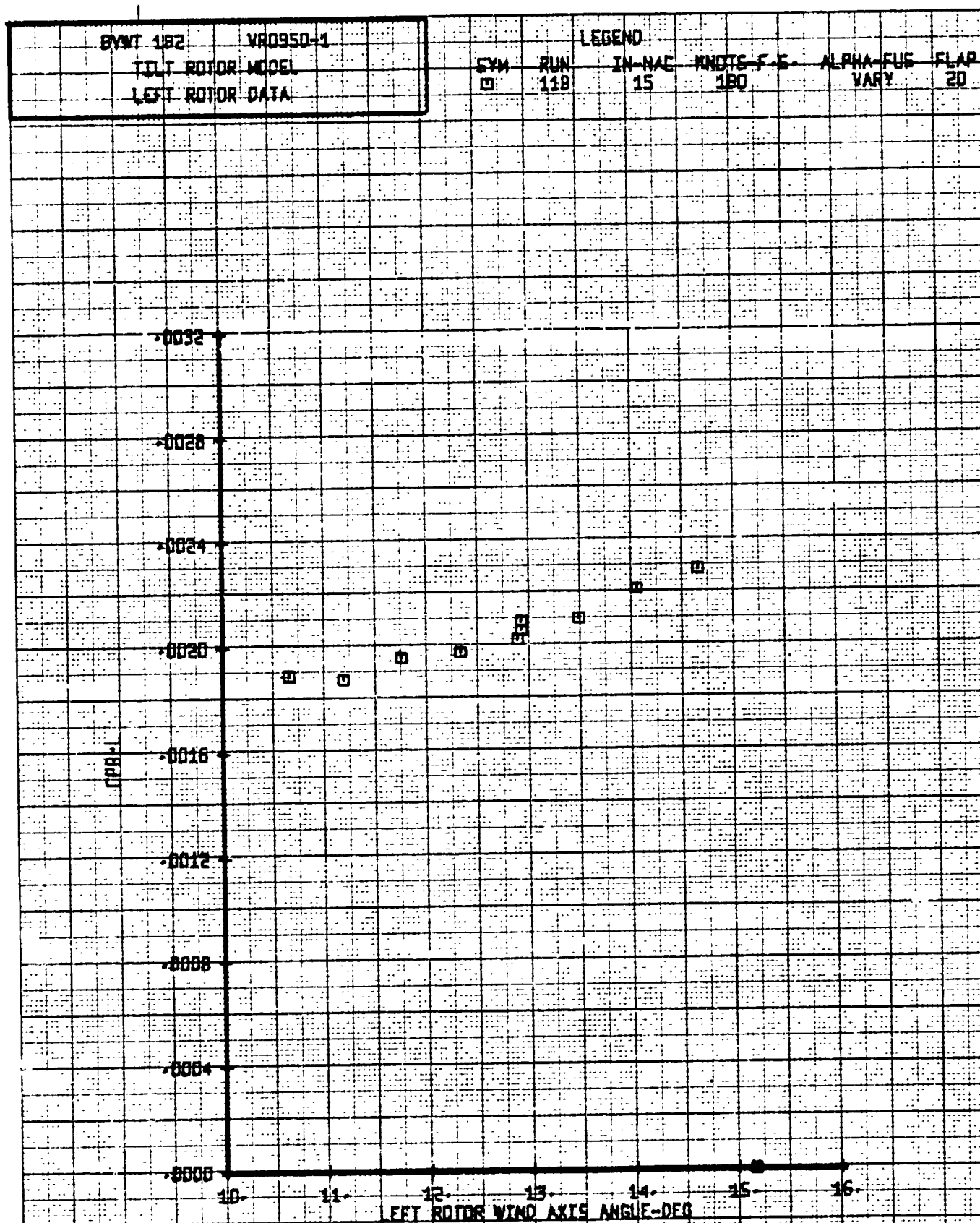


Figure 12-002. Left Rotor Power Coefficient Versus Angle of Attack. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

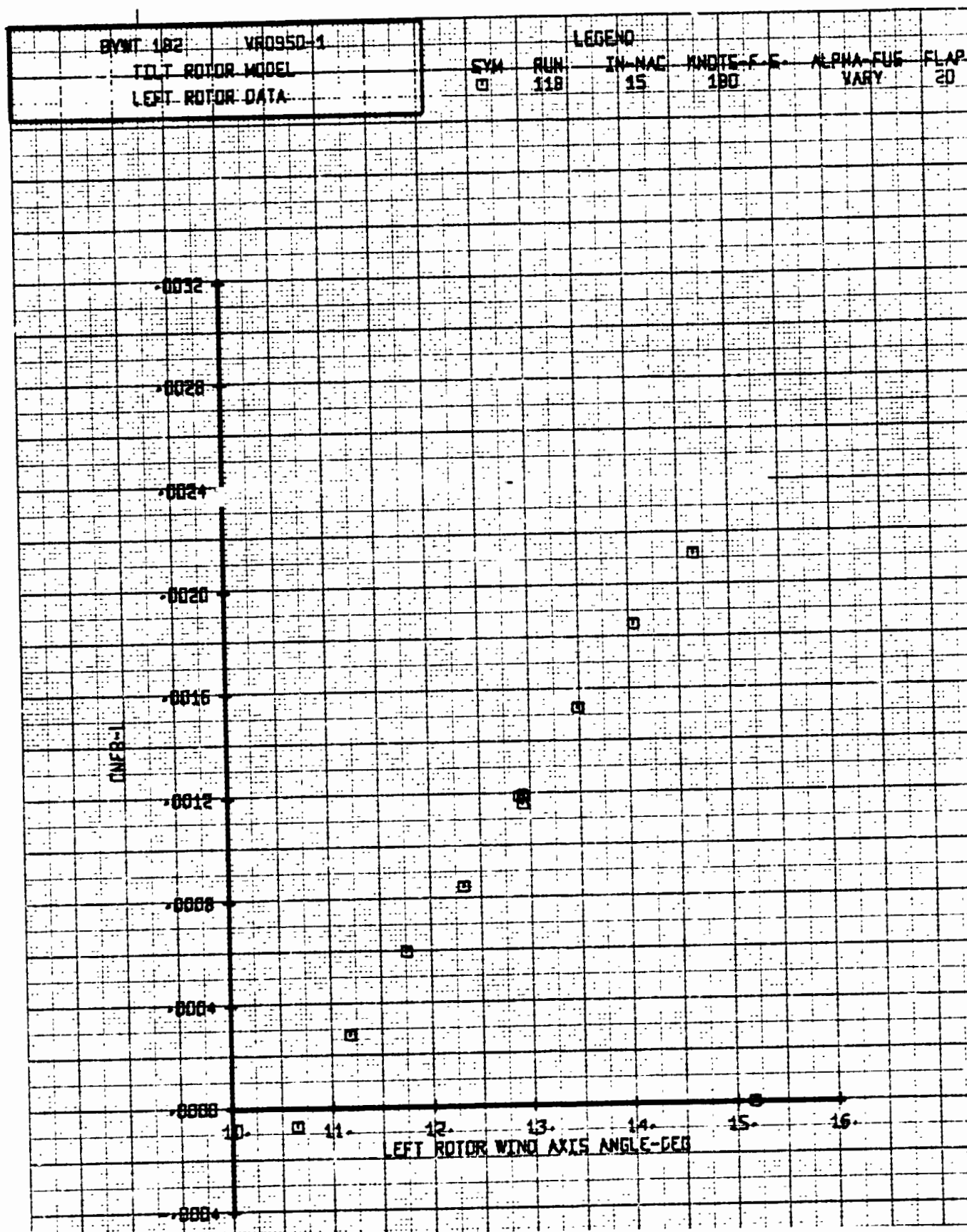


Figure 12-003. Left Rotor Normal Force Coefficient Versus Angle of Attack. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

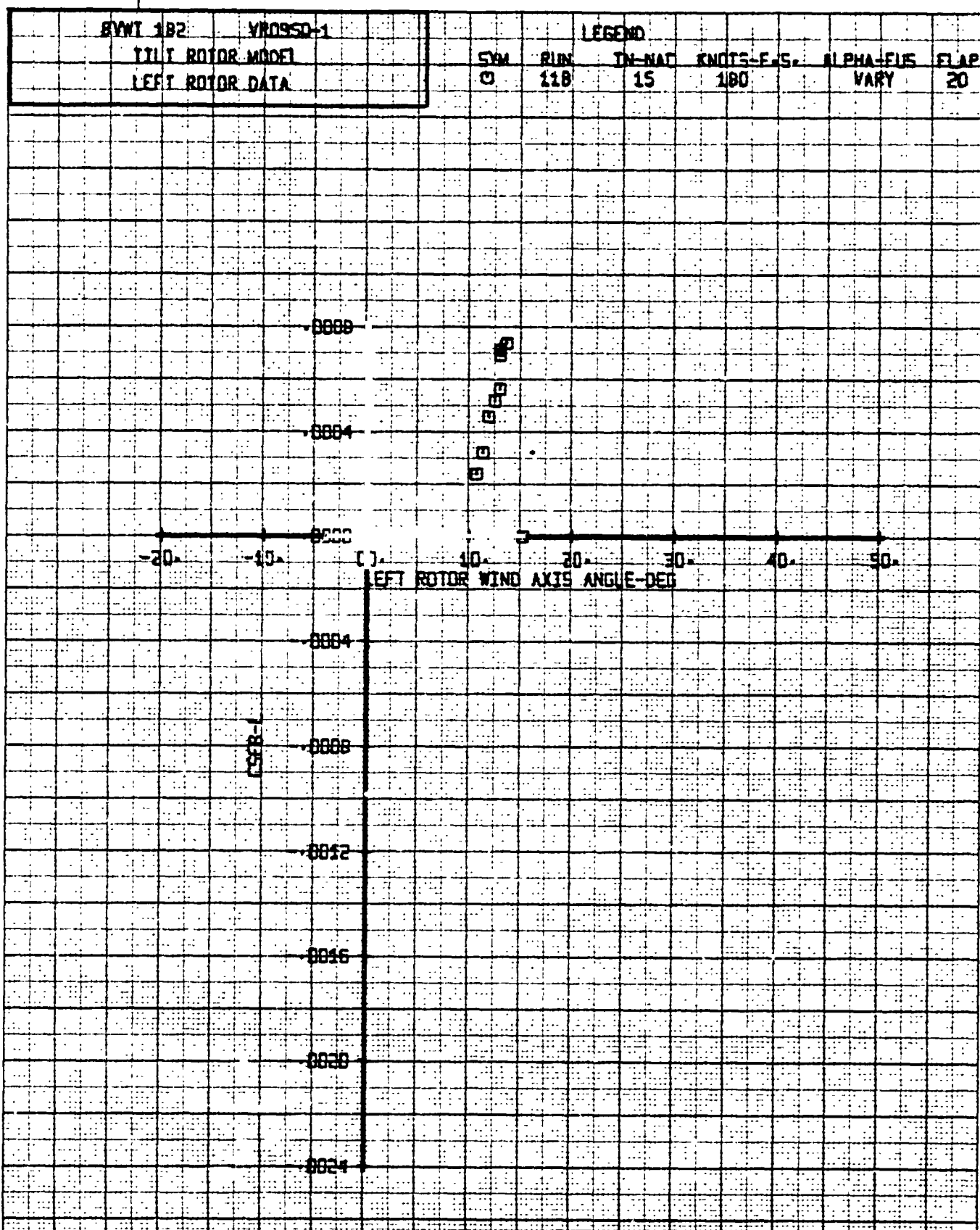


Figure 12-004. Left Rotor Side Force Coefficient Versus Angle of Attack. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

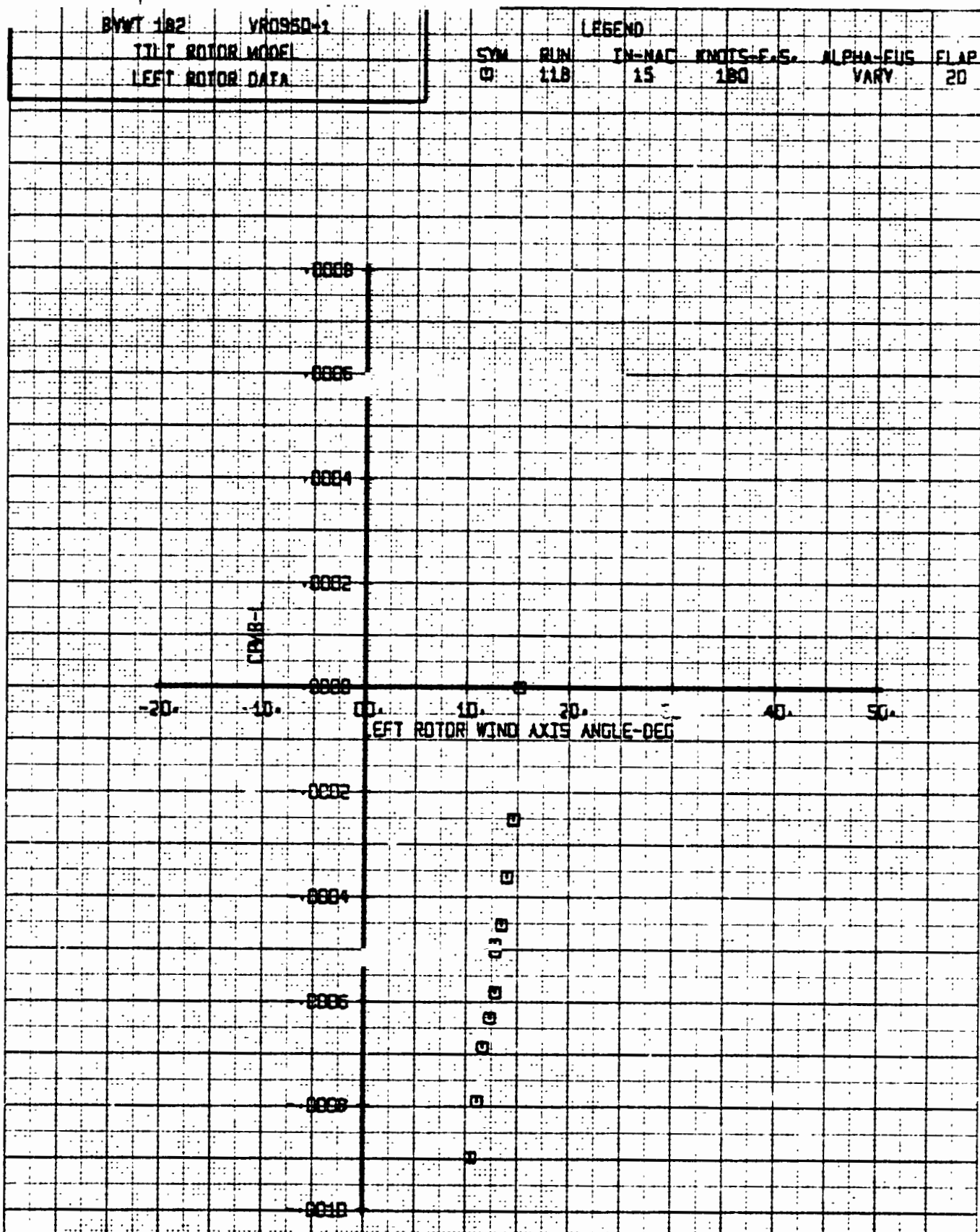


Figure 12-005. Left Rotor Pitching Moment Versus Angle of Attack.
 $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

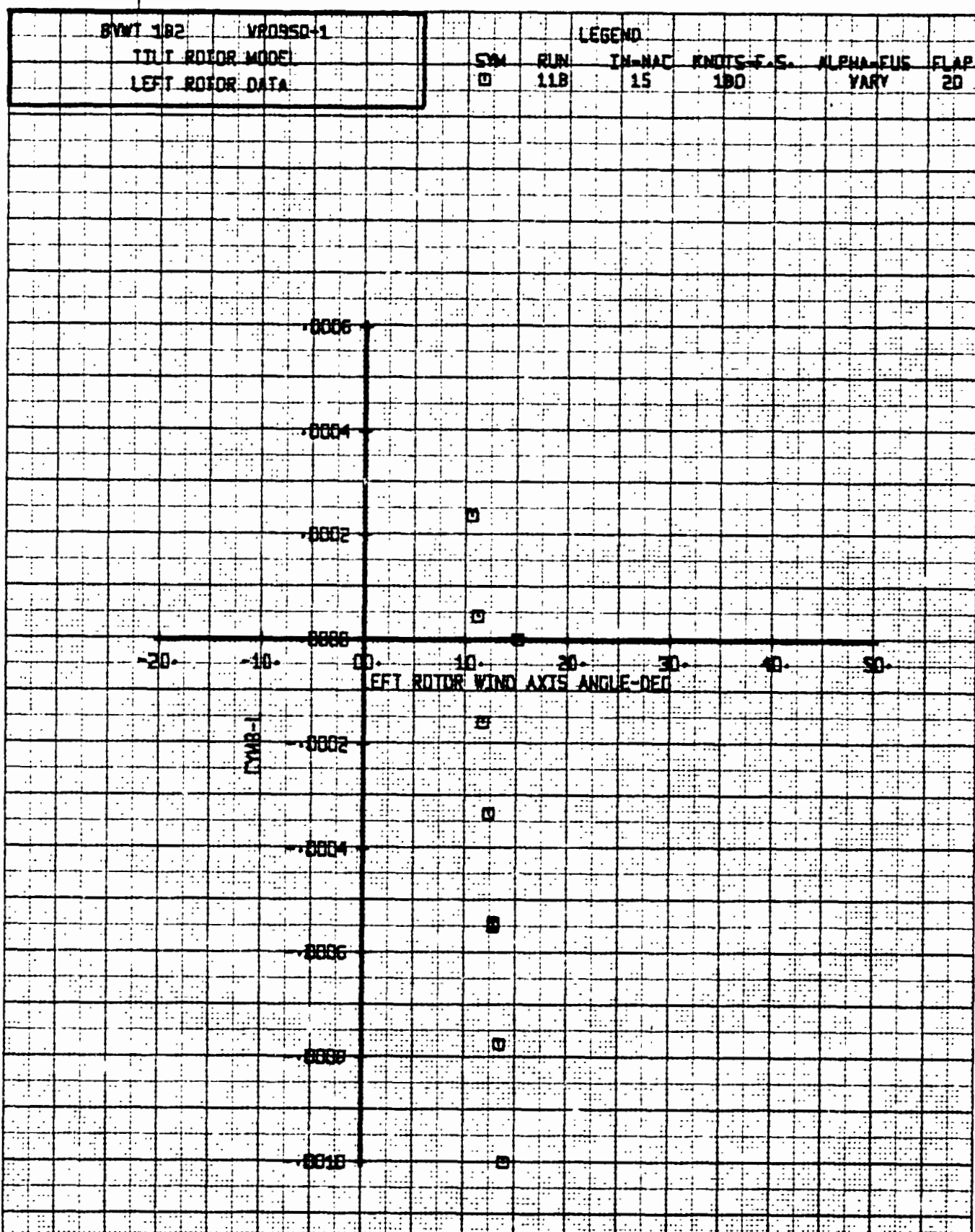
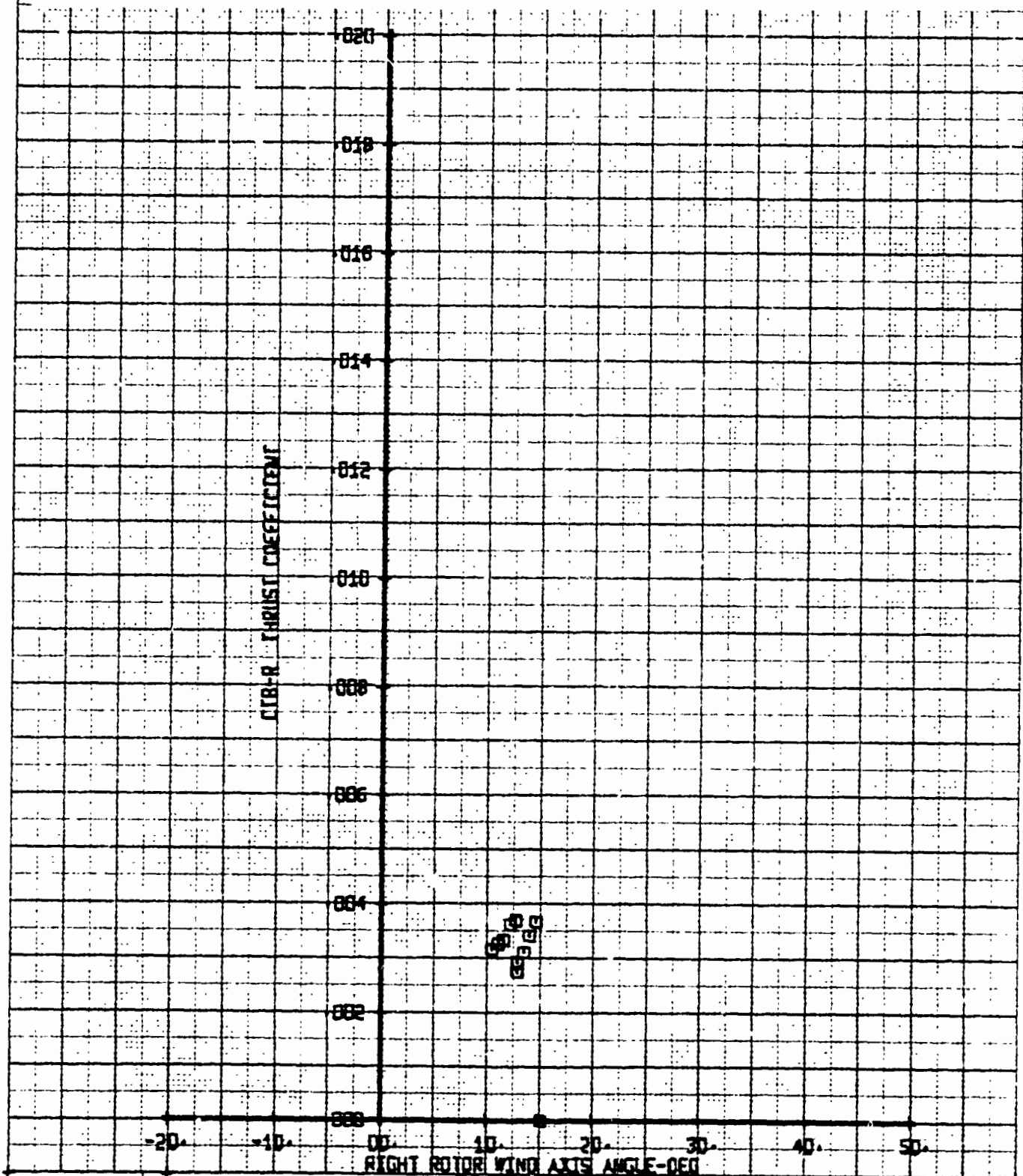
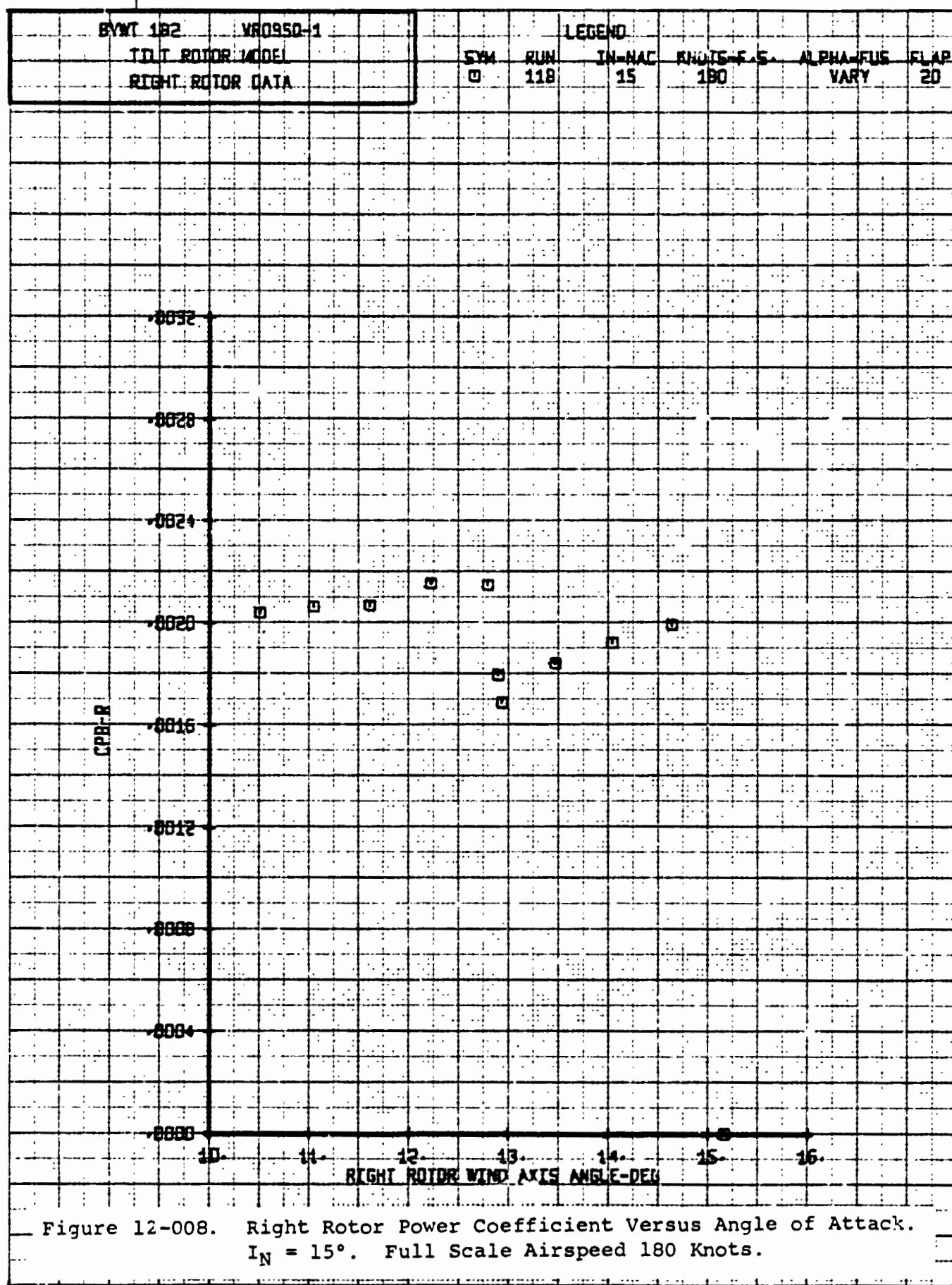


Figure 12-006. Left Rotor Yawing Moment Versus Angle of Attack.
 $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

| | | | | | | |
|------------------|----------|---------|-----|--------|------------|-----------|
| SVWT 182 | VR0950-1 | LEGEND | | | | |
| TILT ROTOR MODEL | | SYM | RUN | IN-MAC | KNOTS-E.S. | ALPHA-EUS |
| RIGHT ROTOR DATA | | □ | 11B | 15 | 180 | VARY |
| | | FLAP 20 | | | | |

Figure 12-007. Right Rotor Thrust Coefficient Versus Angle of Attack.
 $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.





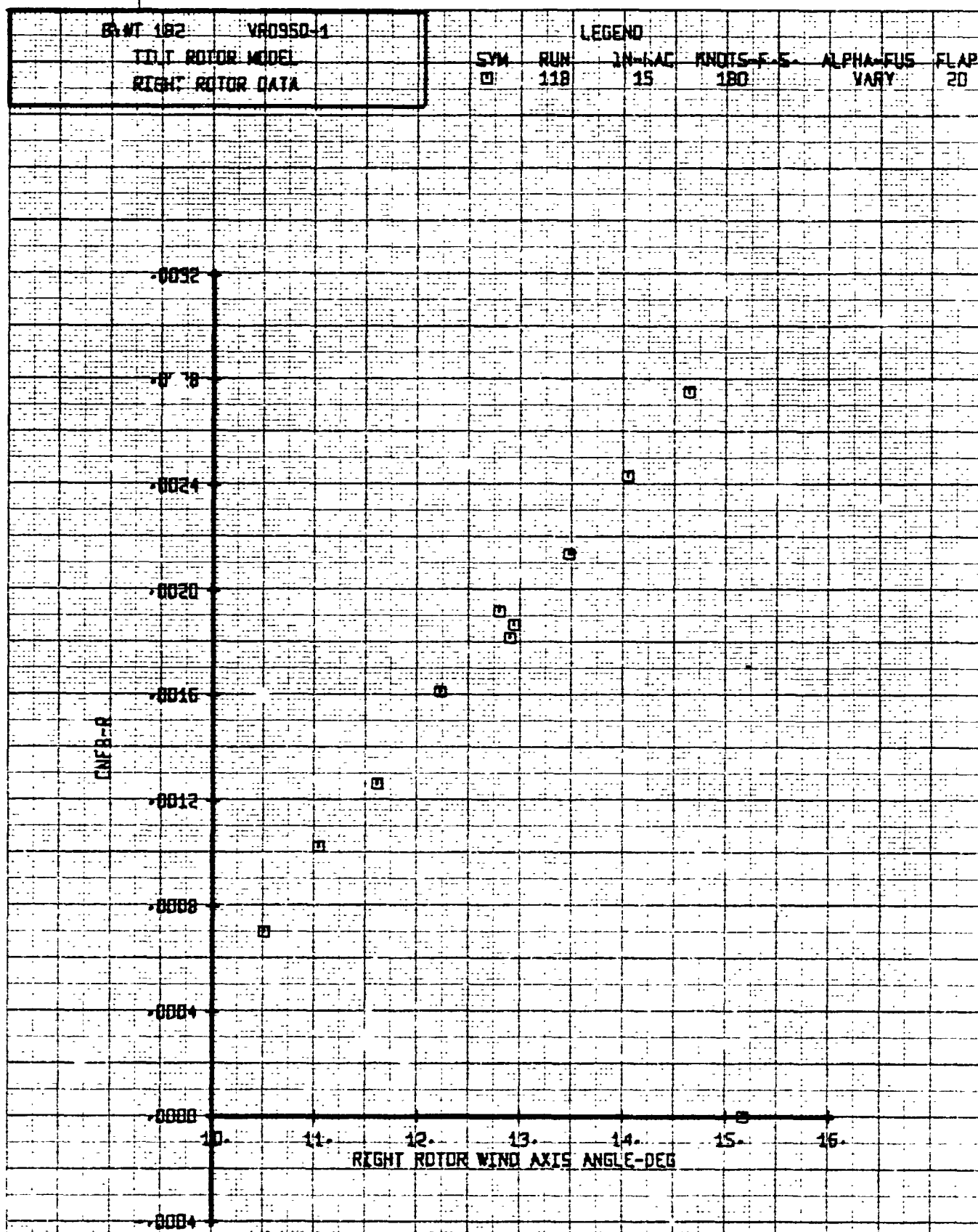
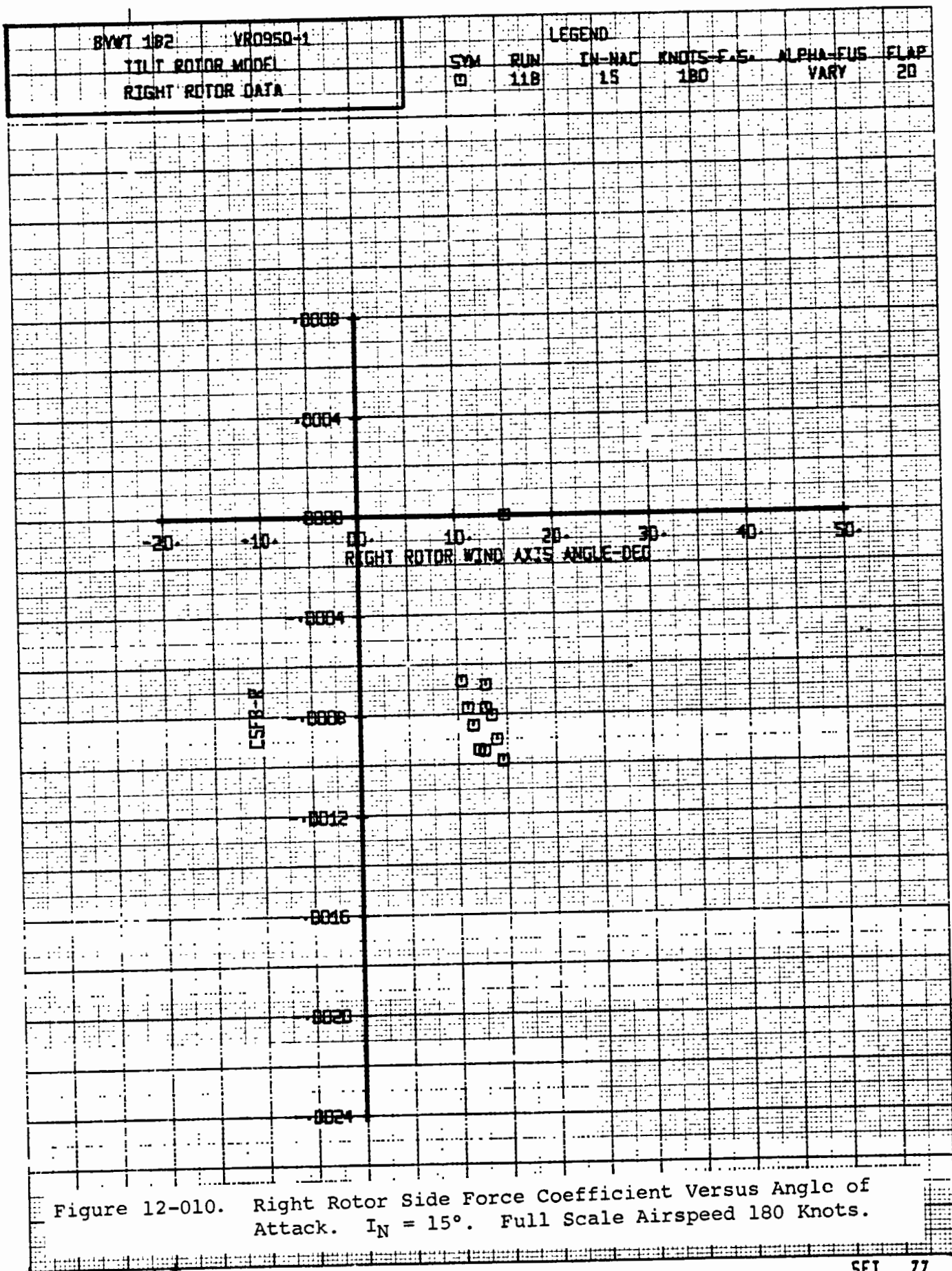


Figure 12-009. Right Rotor Normal Force Coefficient Versus Angle of Attack. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.



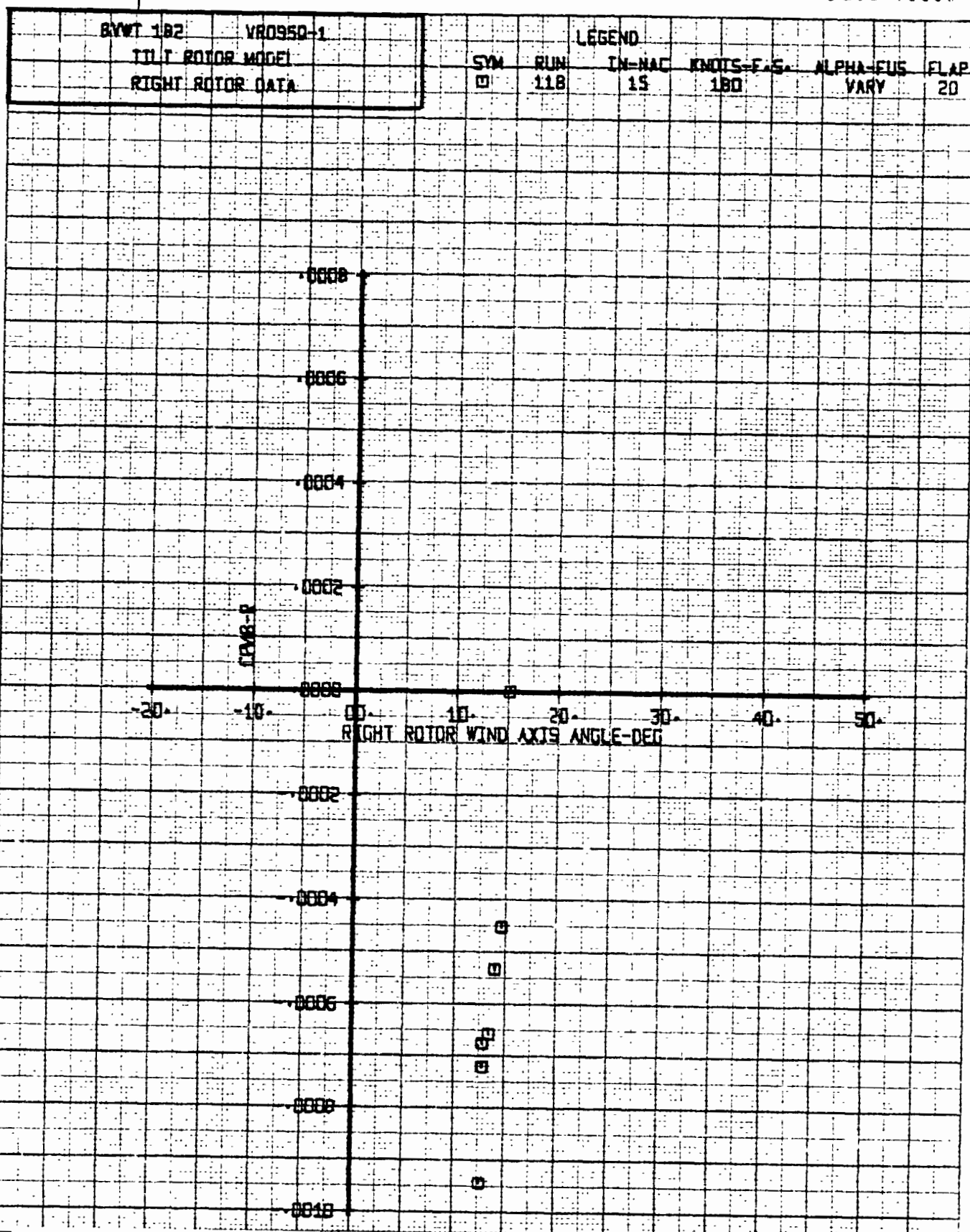
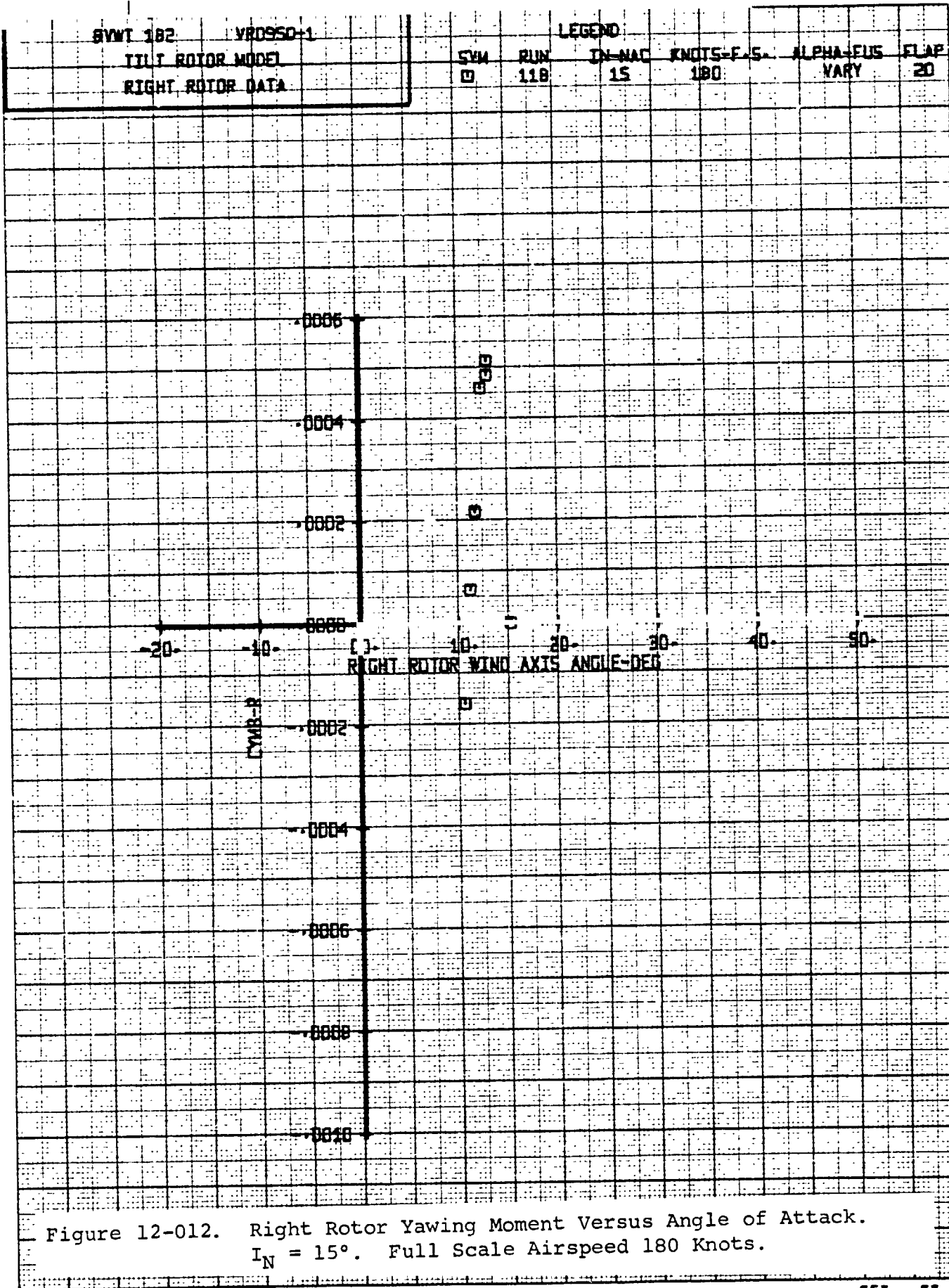
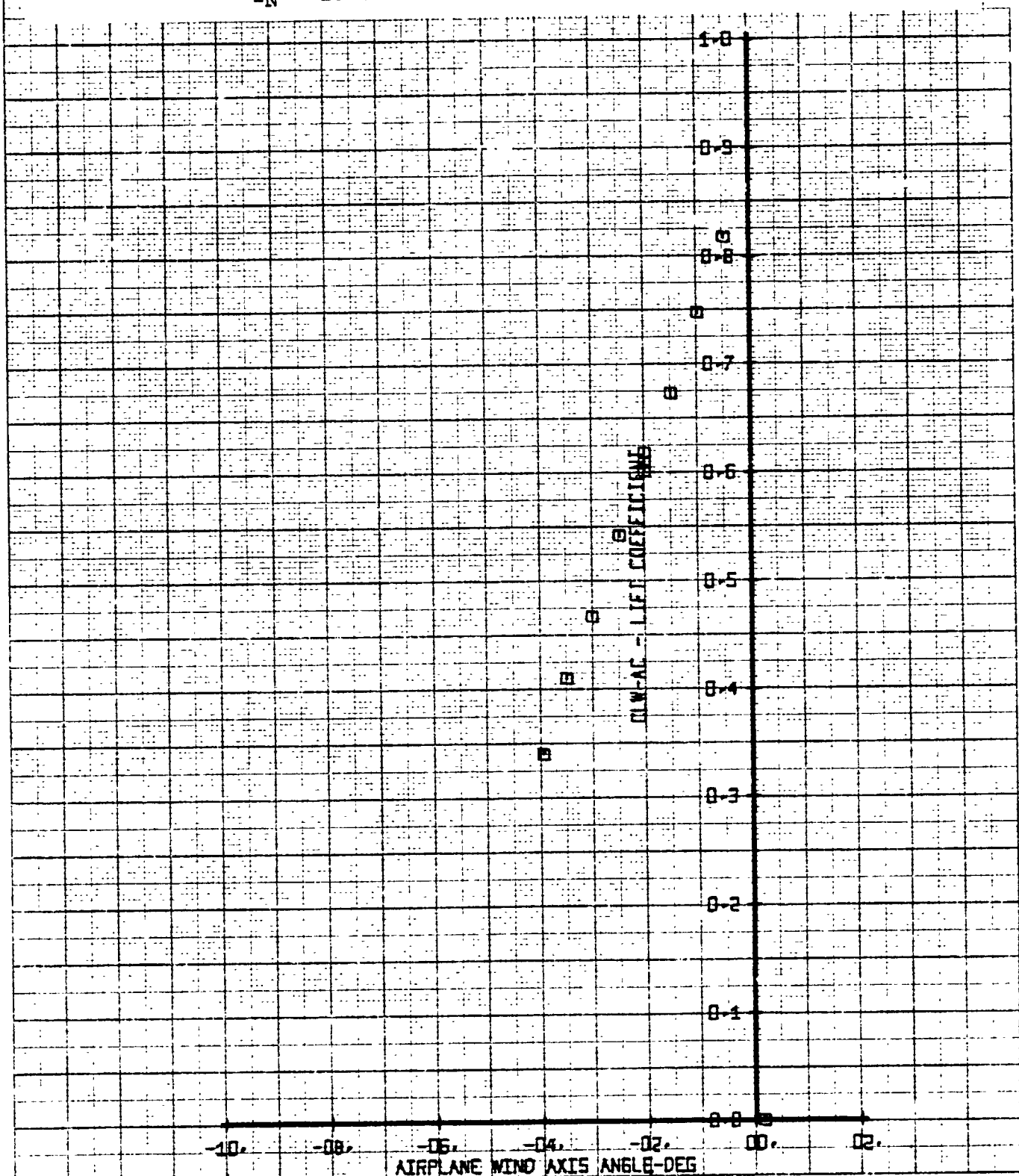


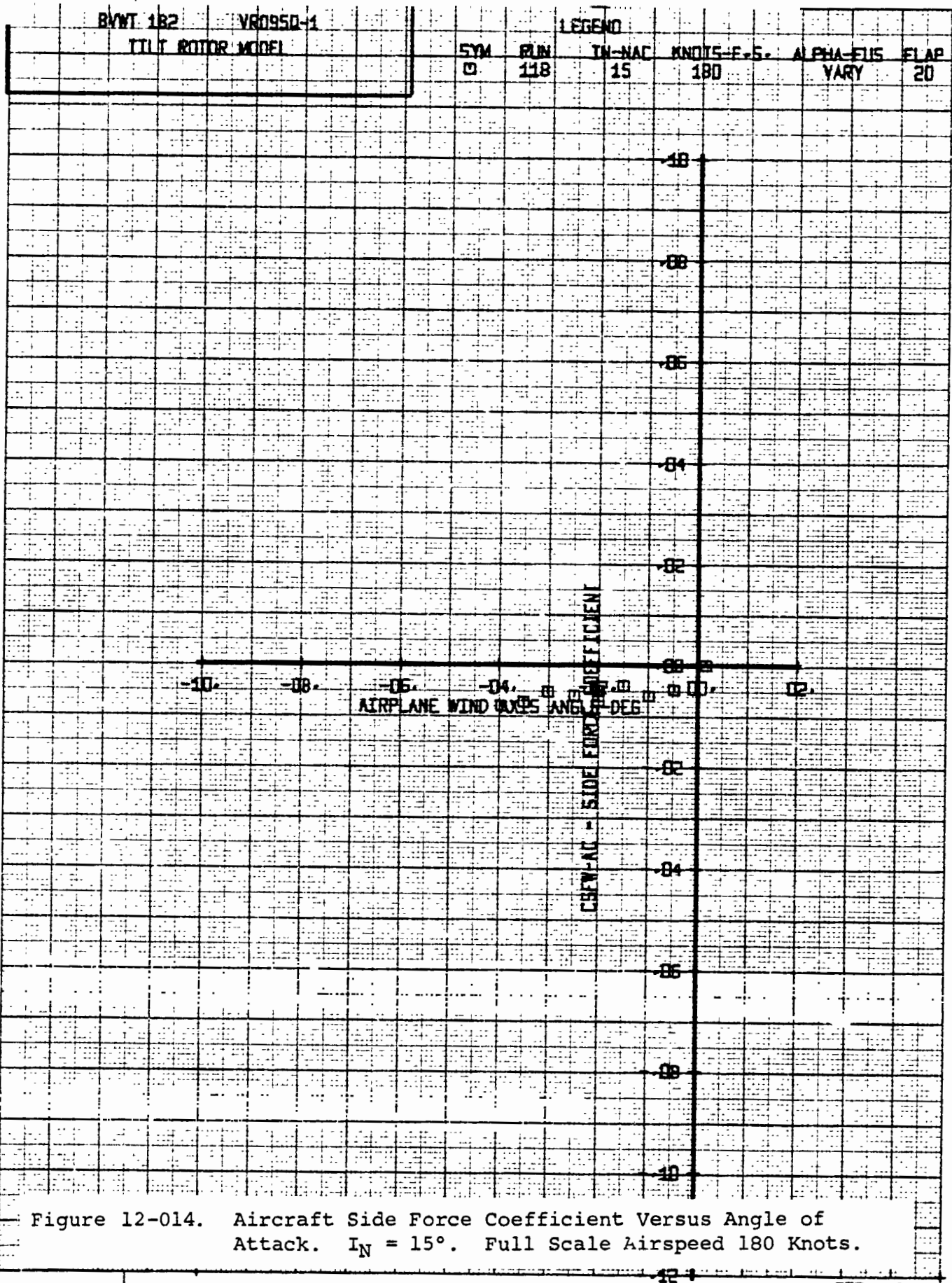
Figure 12-011. Right Rotor Pitching Moment Versus Angle of Attack.
 $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

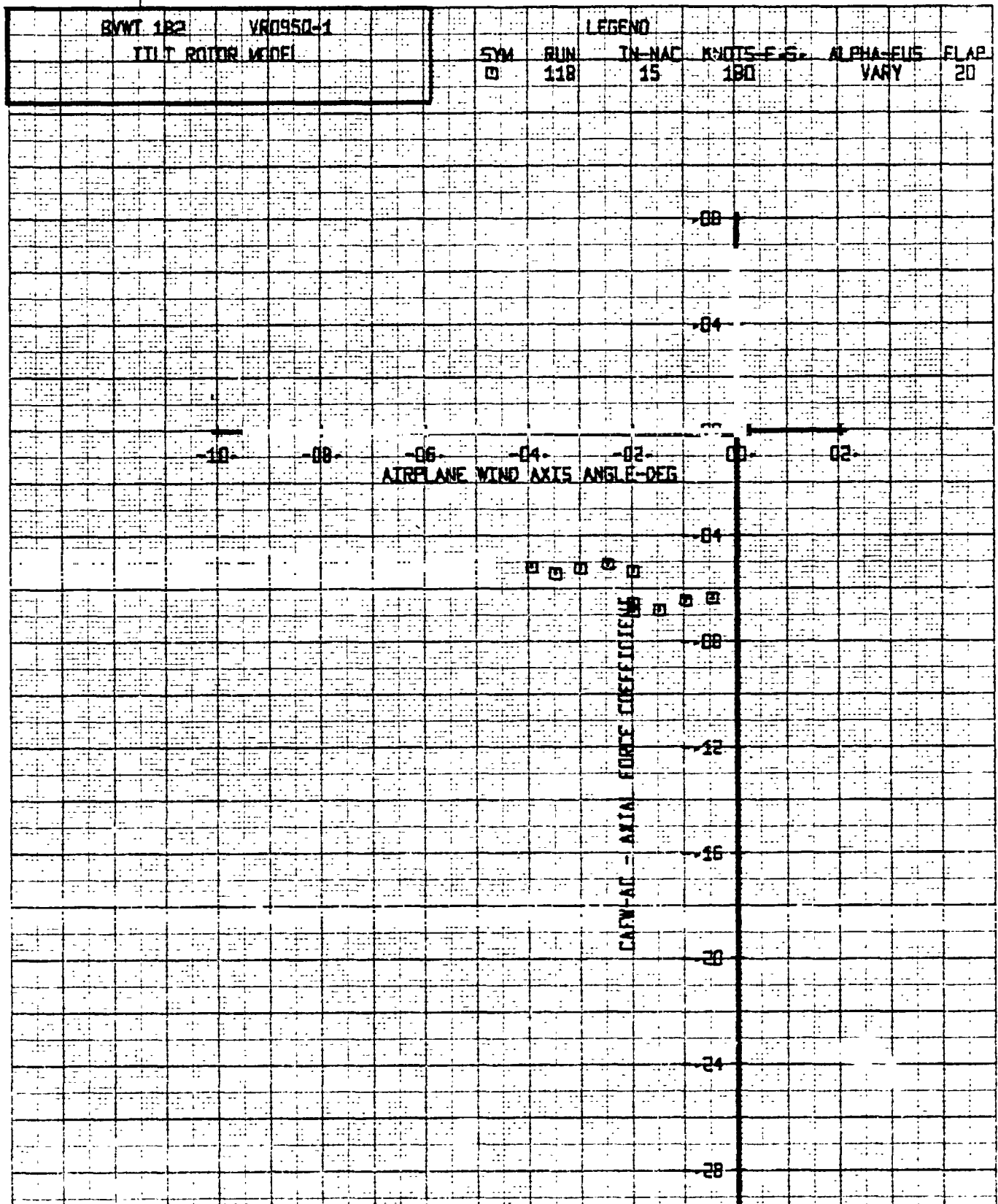


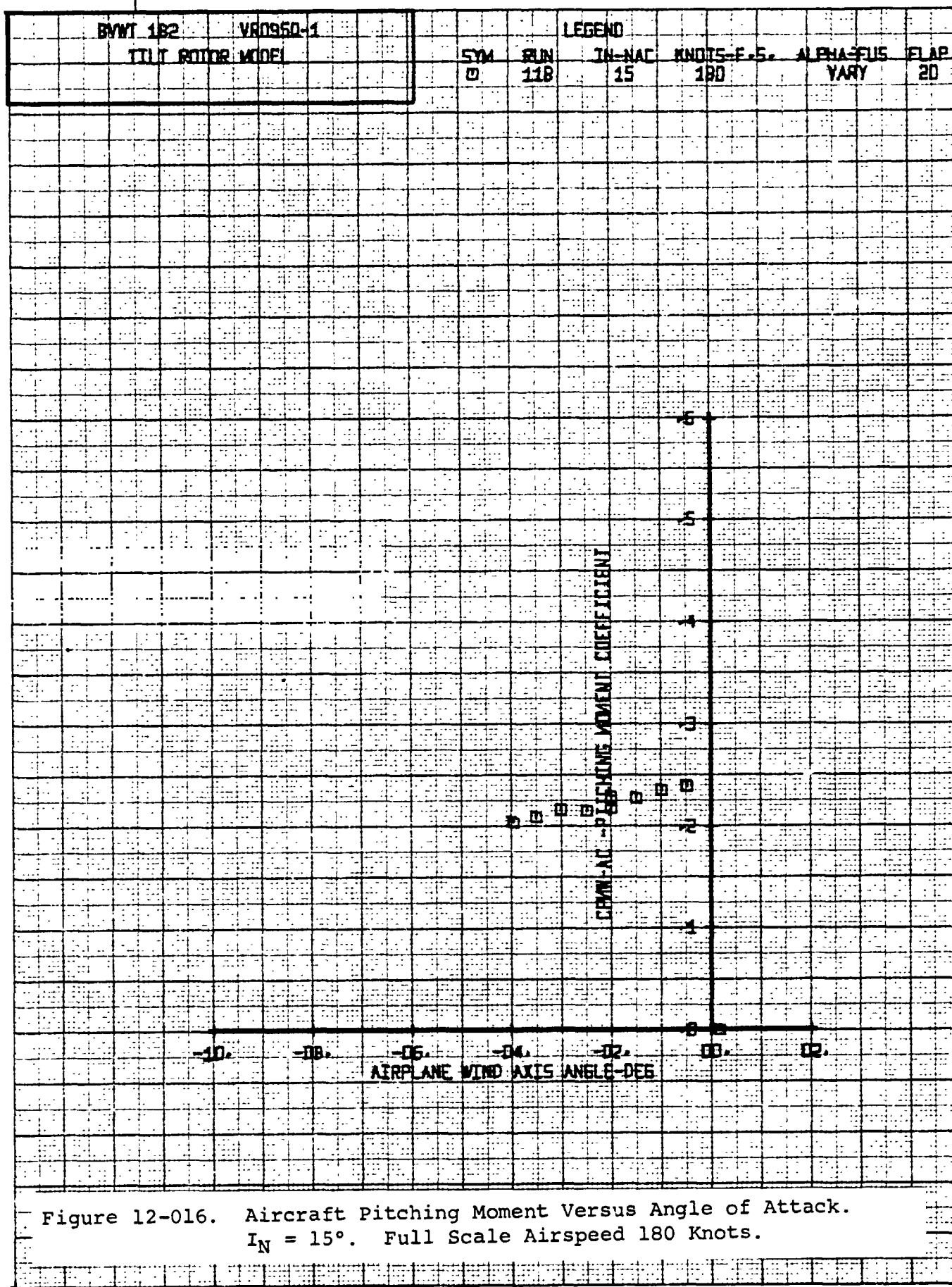
| | | | | | | | |
|--------------------|--|----------|--|--------|-----|--------|------------|
| BVWT 182 | | VR0950-1 | | LEGEND | | | |
| T.O.T. ROTOR MODEL | | | | SYM | MIN | IN-NAC | KNOTS-E.S. |
| | | | | 0 | 118 | 15 | 180 |
| | | | | | | | ALPHA-FUS |
| | | | | | | | VARY |
| | | | | | | | FLAP |
| | | | | | | | 20 |

Figure 12-013. Aircraft Lift Coefficient Versus Angle of Attack.
 $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.









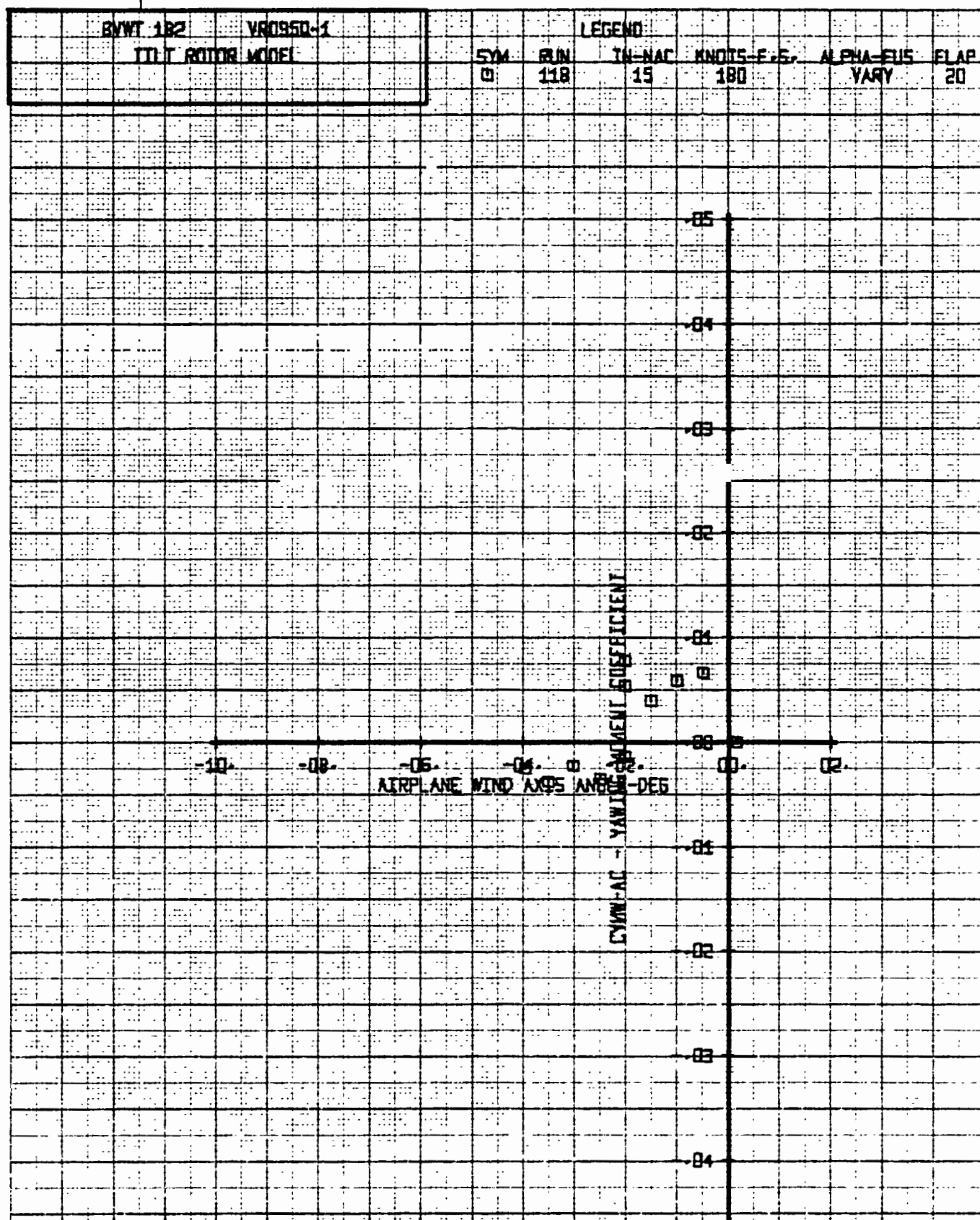
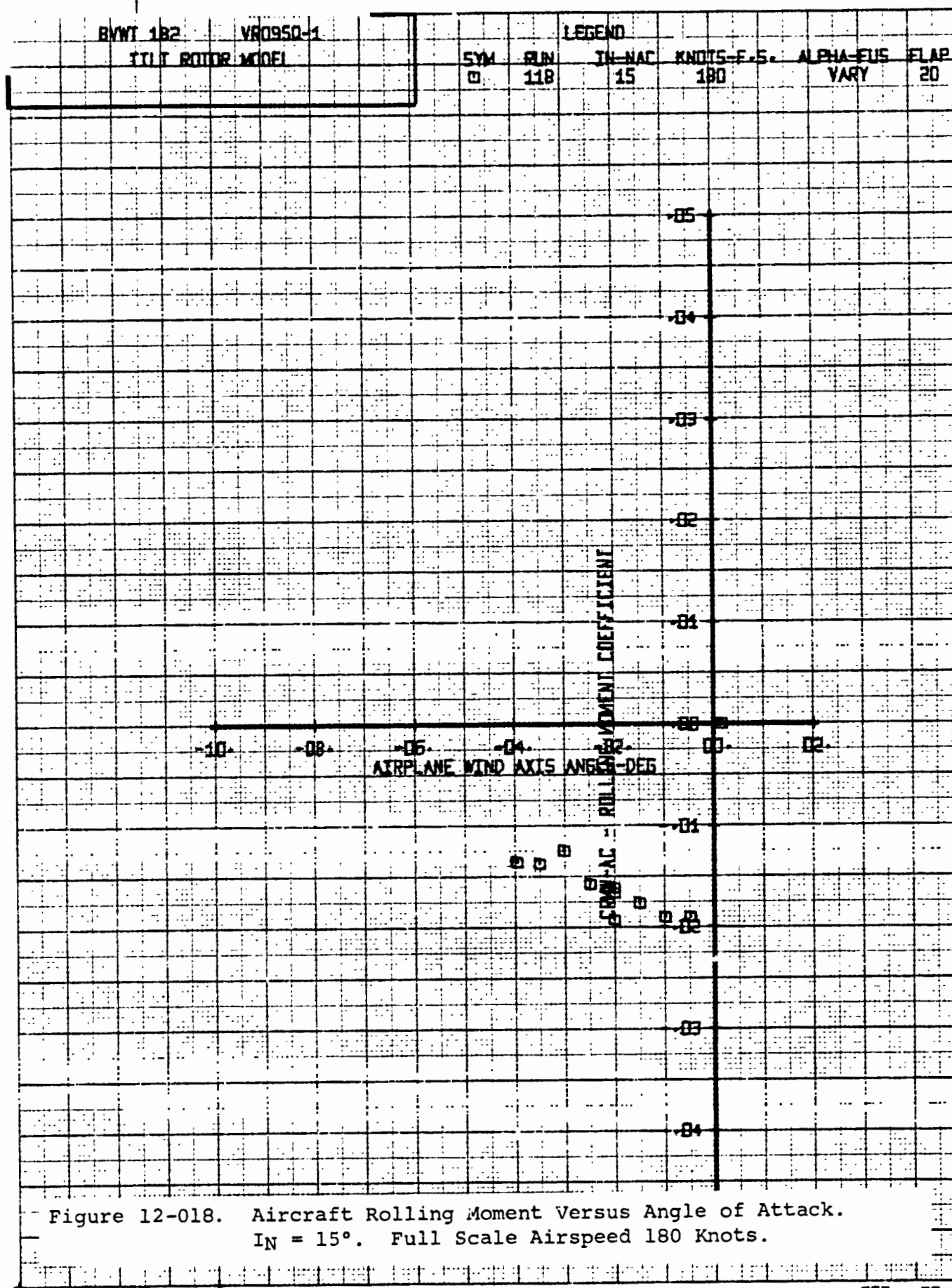


Figure 12-017. Aircraft Yawing Moment Versus Angle of Attack.
 $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.



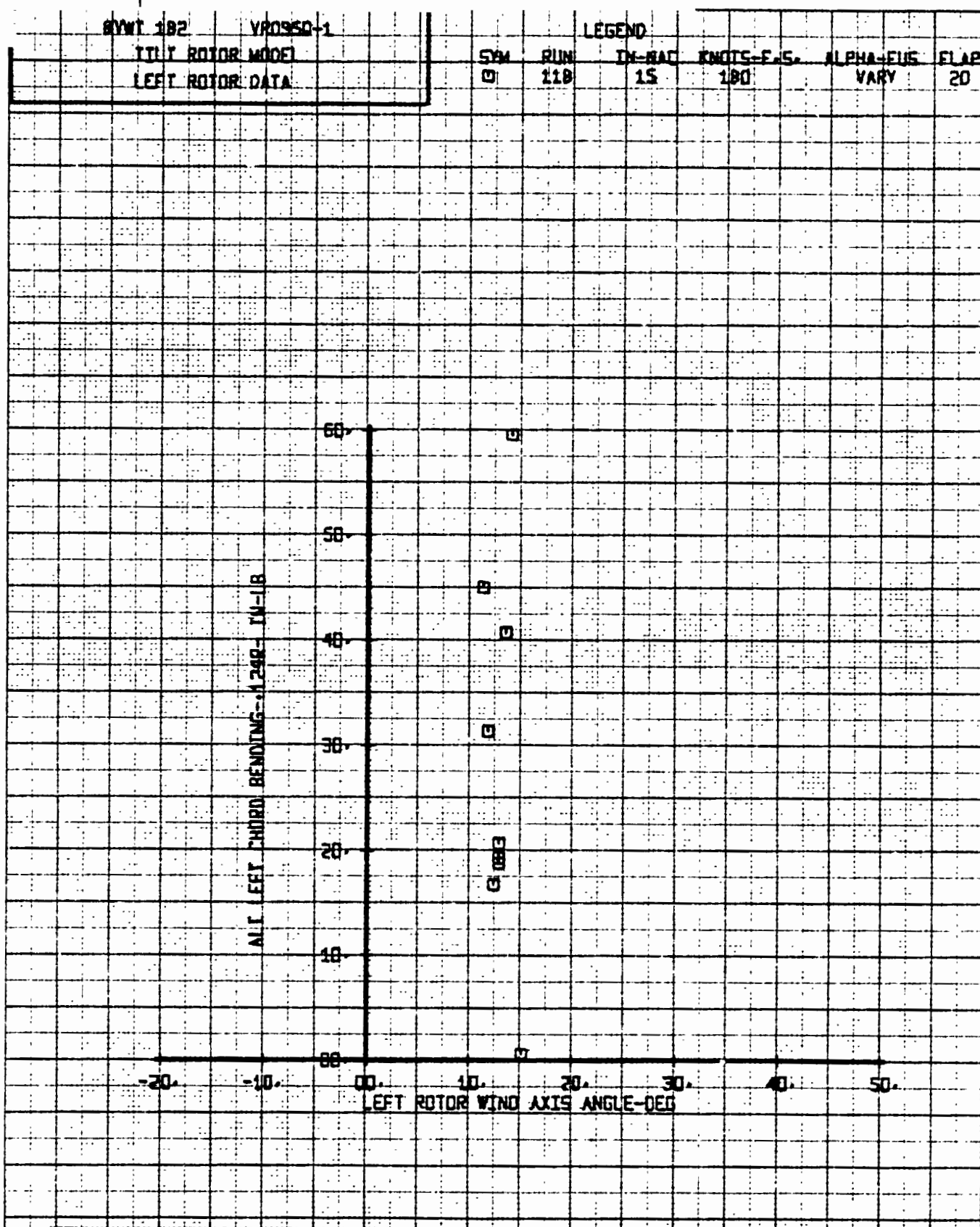
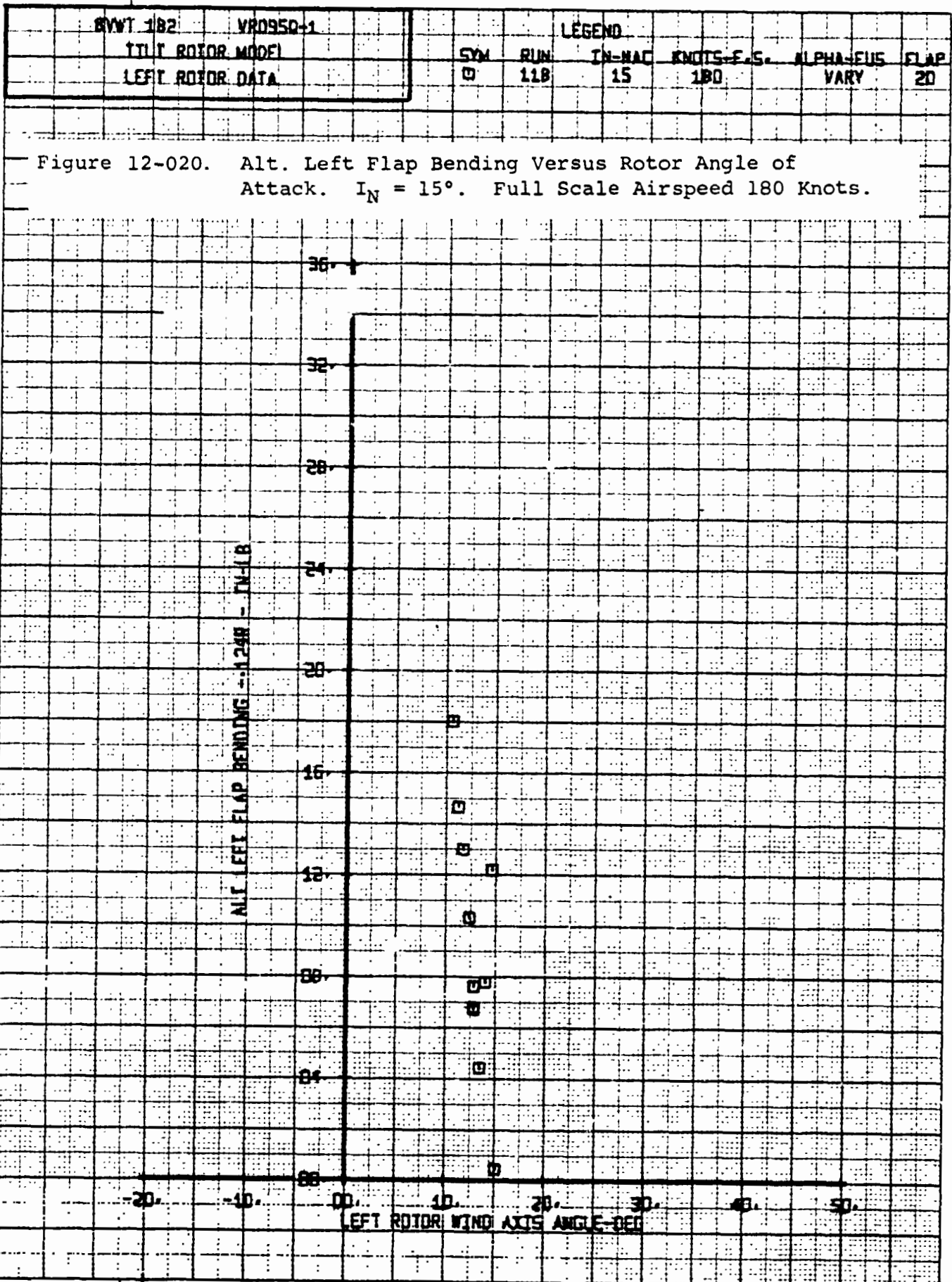


Figure 12-019. Alt. Left Chord Bending Versus Rotor Angle of Attack. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.



ALT LEFT PITCH ARM - DEG

LEFT ROTOR WIND AXIS ANGLE-DEG

| LEFT ROTOR WIND AXIS ANGLE-DEG | ALT LEFT PITCH ARM - DEG |
|--------------------------------|--------------------------|
| 10.5 | 4.8 |
| 11.2 | 5.0 |
| 11.8 | 5.5 |
| 12.5 | 5.8 |
| 12.8 | 6.5 |
| 13.0 | 6.5 |
| 13.2 | 6.8 |
| 13.5 | 7.2 |
| 14.0 | 7.5 |
| 14.5 | 7.8 |
| 15.0 | 2.2 |

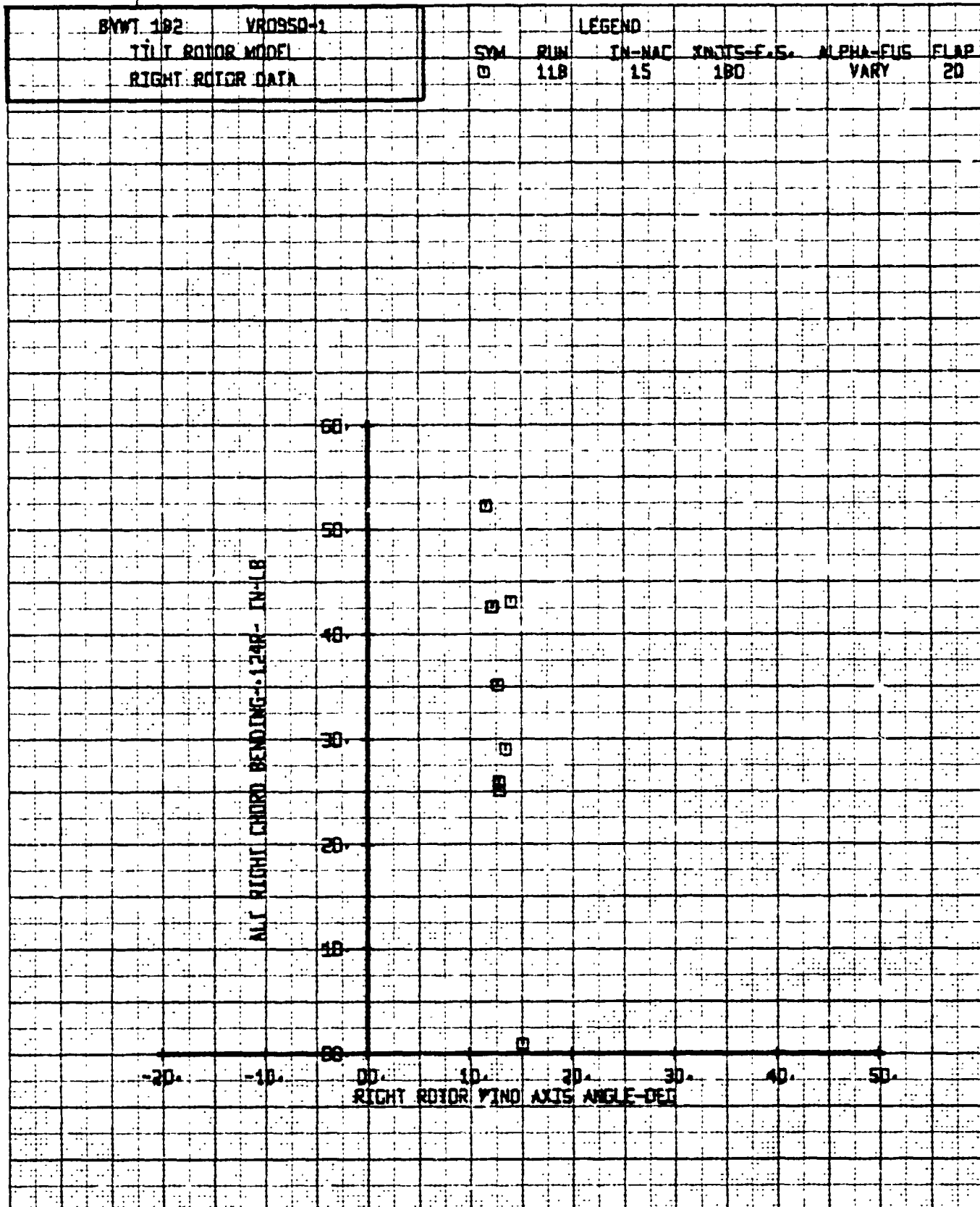
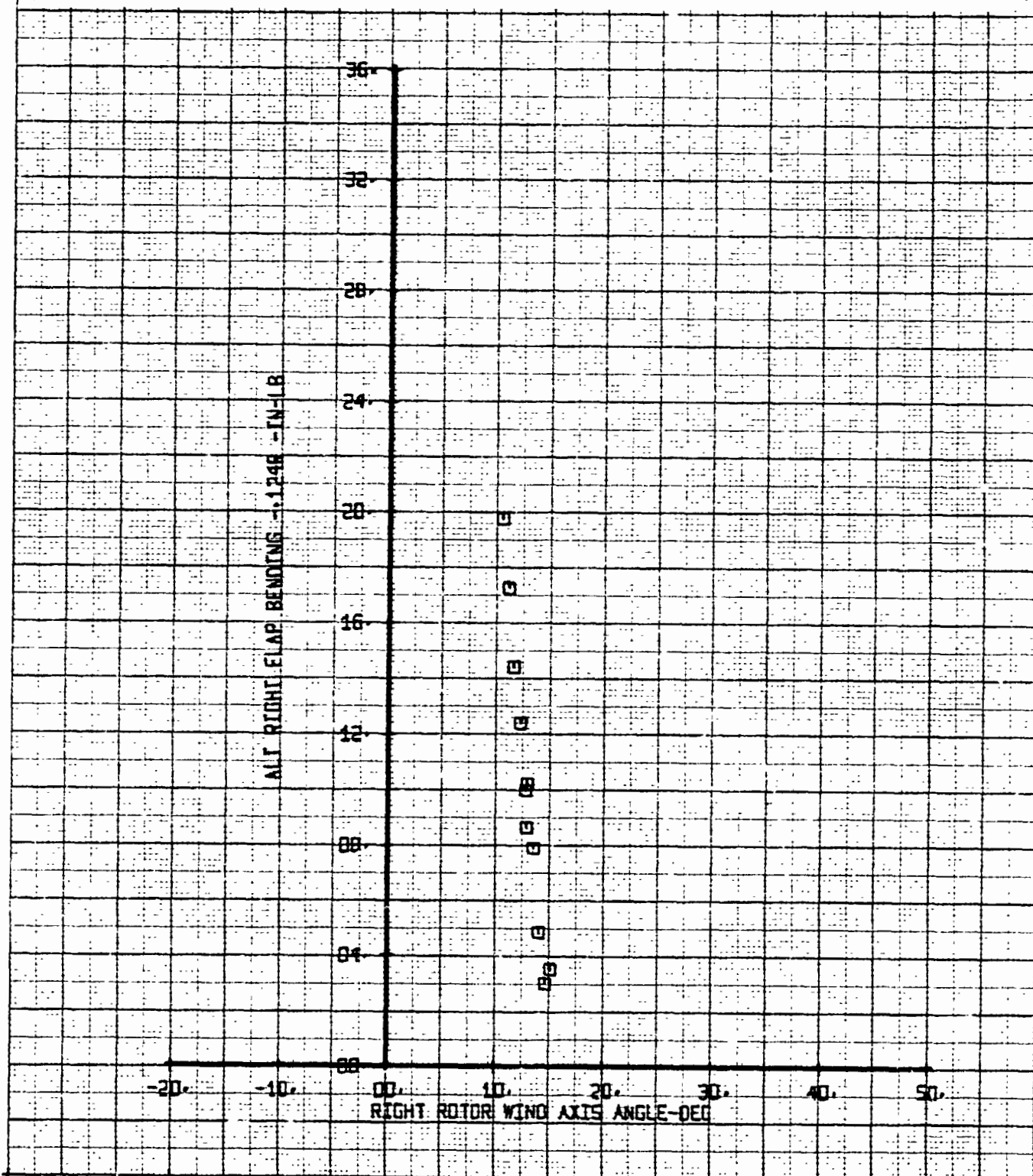


Figure 12-022. Alt. Right Chord Bending Versus Rotor Angle of Attack. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

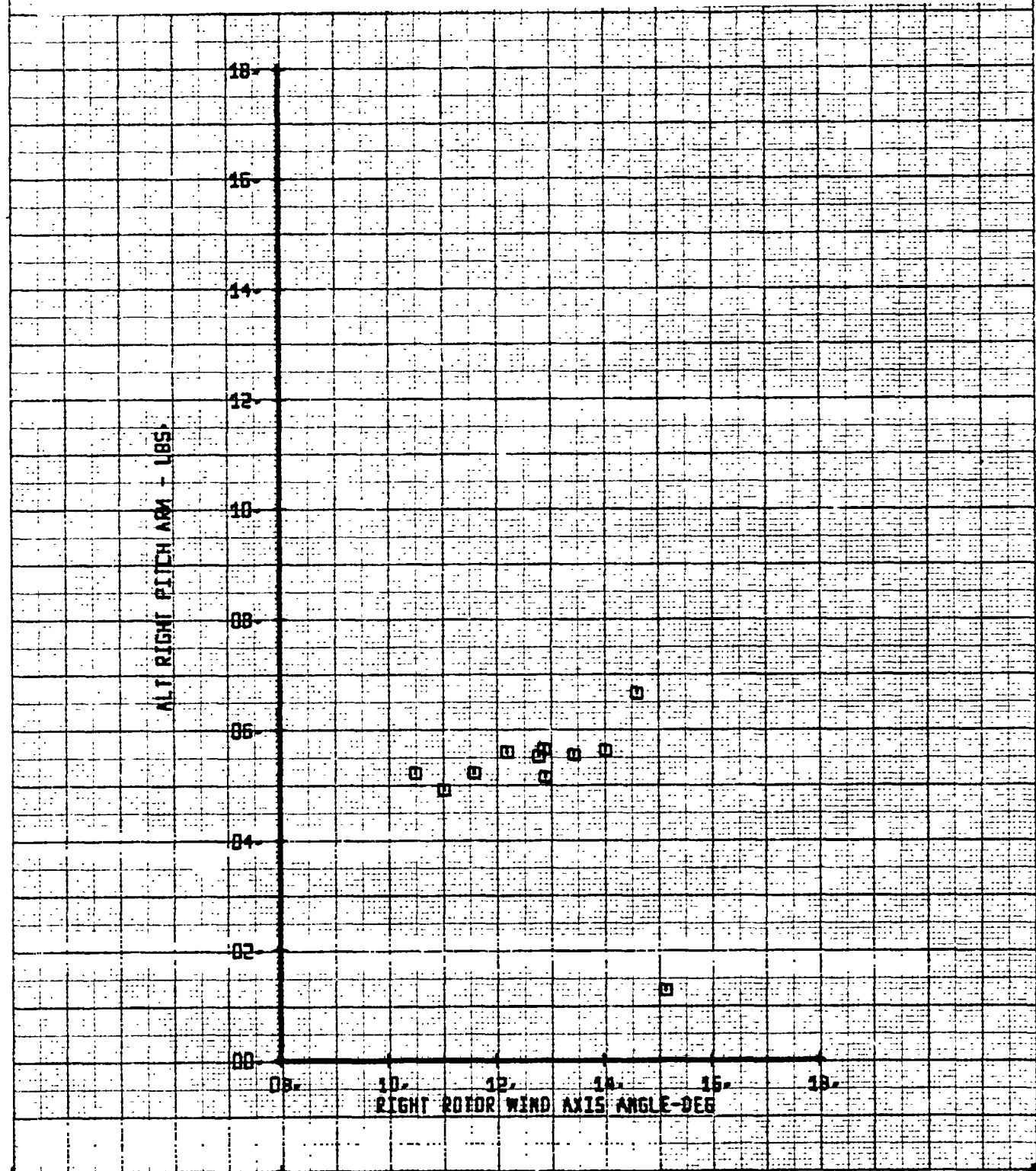
| | | | | | | |
|------------------|----------|--------|-----|--------|-----------|-----------|
| BVWT 182 | VR0950-1 | LEGEND | | | | |
| TILT ROTOR MODEL | | SYM | RUN | IN-NAE | KNOTS-F-S | ALPHA-EUS |
| RIGHT ROTOR DATA | | 0 | 11B | 15 | 180 | VARY |
| | | | | | | FLAP 20 |

Figure 12-023. Alt. Right Flap Bending Versus Rotor Angle of Attack. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.



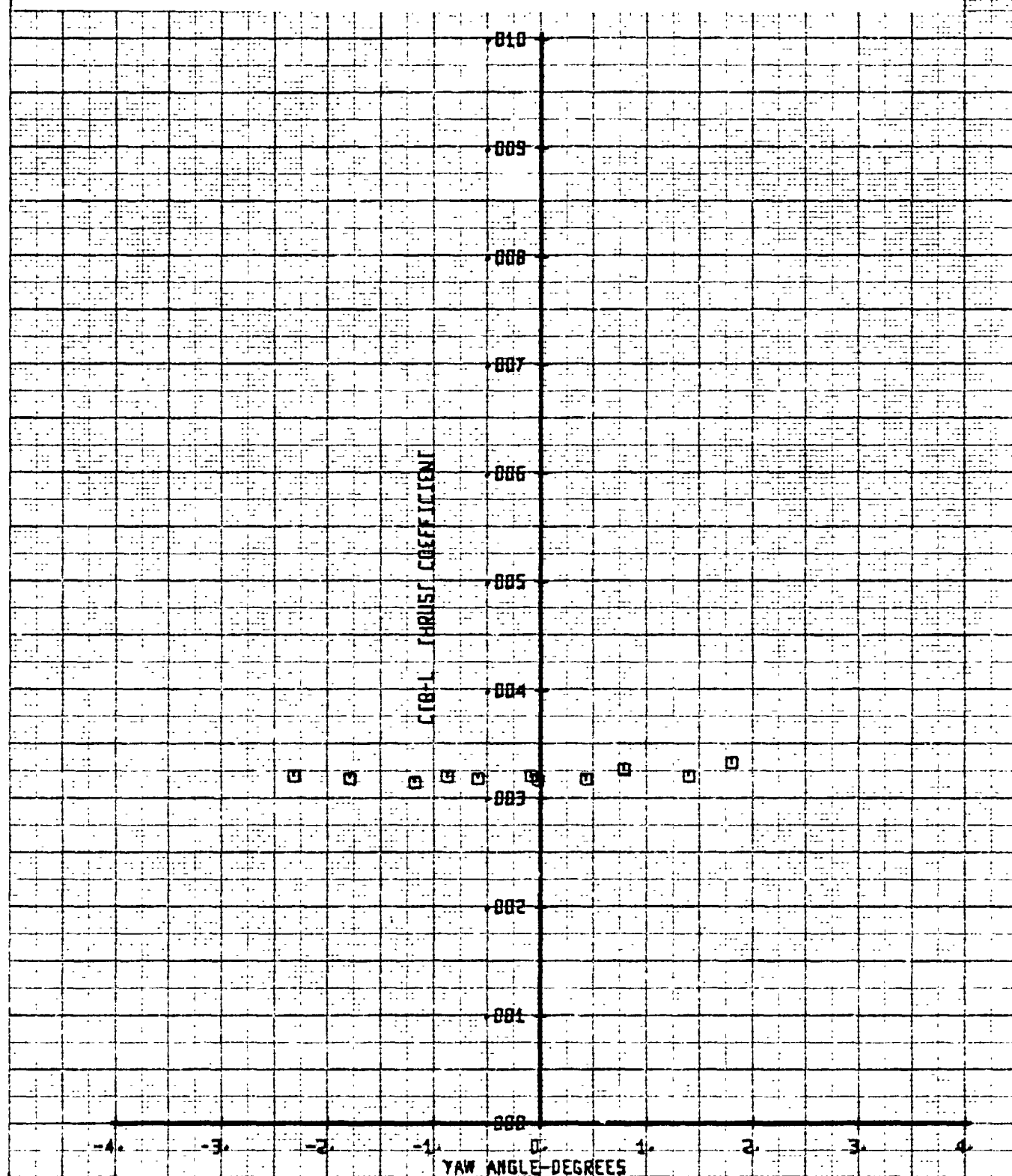
| | | | | | | |
|-------------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | VR0950-1 | LEGEND | | | | |
| TILLY ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-DEG |
| RIGHT ROTOR DATA | | G | 11B | 15 | 180 | VARY |
| | | | | | | FLAP 20 |

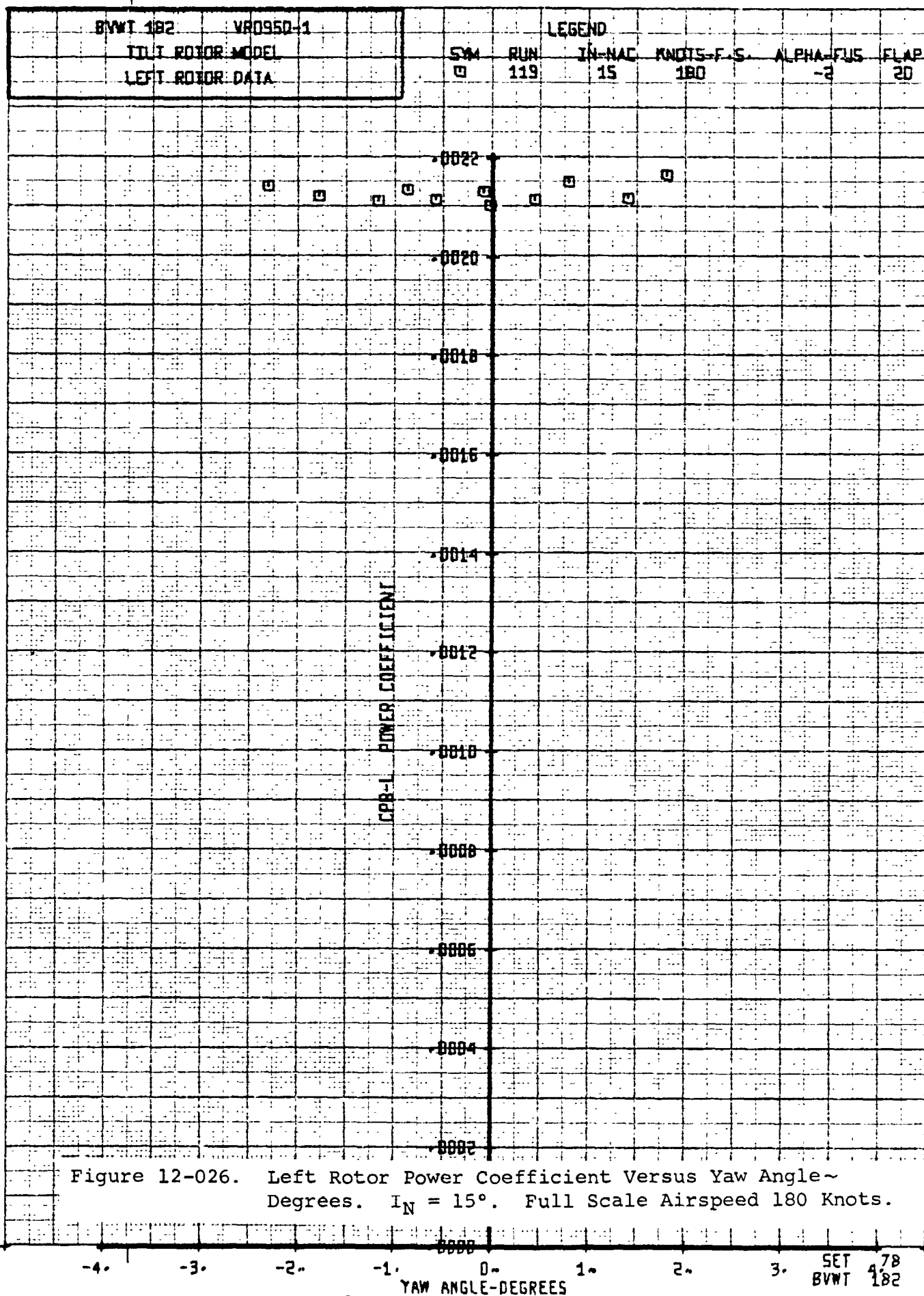
Figure 12-024. Alt. Right Pitch Link Load Versus Rotor Angle of Attack. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.



| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | VR0950-1 | LEGEND | | | | |
| TILT ROTOR MODEL | | Sym | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FUS |
| LEFT ROTOR DATA | | 0 | 119 | 15 | 180 | -2 |
| | | | | | | FLAP 20 |

Figure 12-025. Left Rotor Thrust Coefficient Versus Yaw Angle ~ Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.





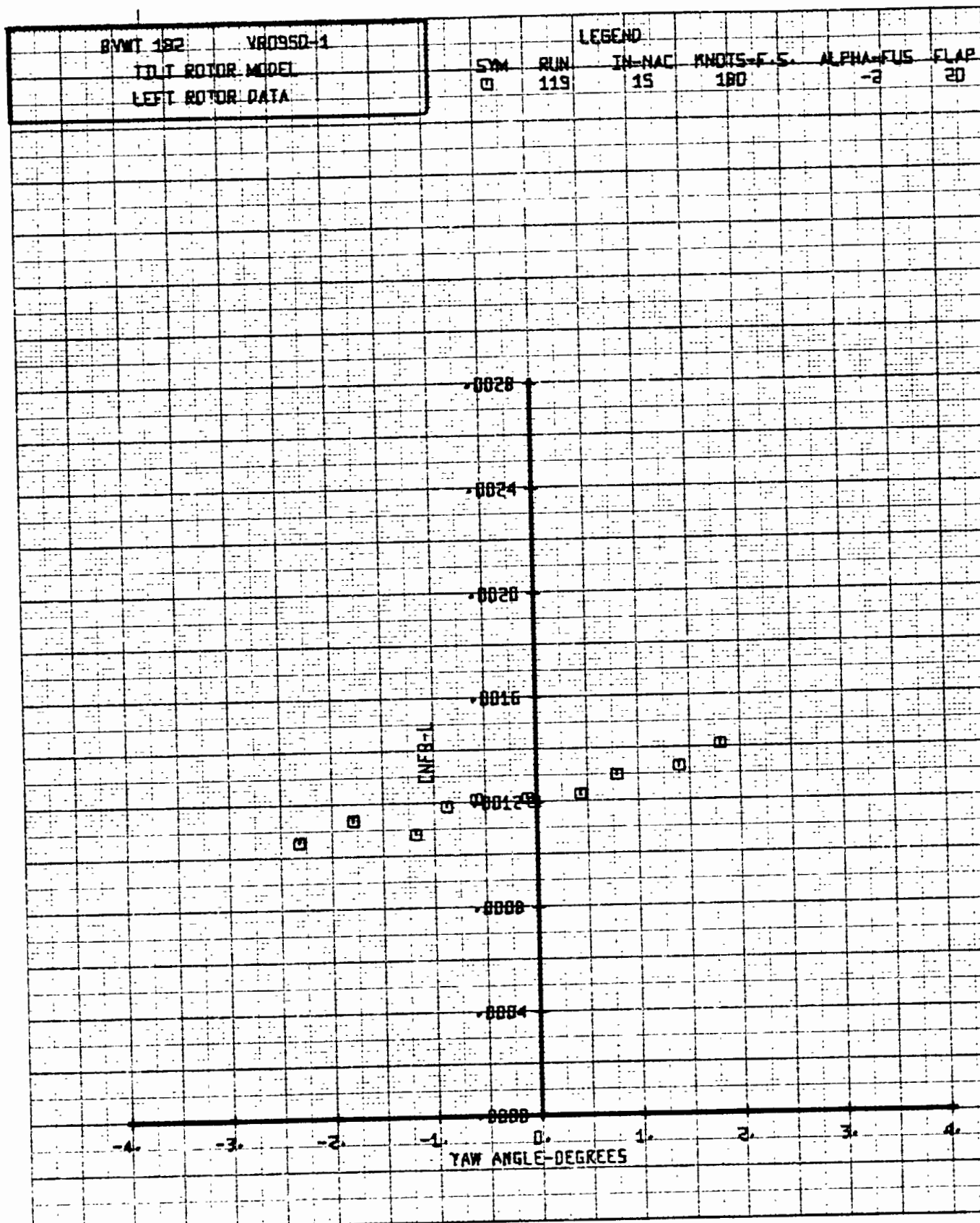


Figure 12-027. Left Rotor Normal Force Coefficient Versus Yaw Angle ~ Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | VR0950-1 | LEGEND | | | | |
| TILT ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FUS |
| LEFT ROTOR DATA | | □ | 119 | 15 | 180 | -2 |
| | | | | | | 20 |

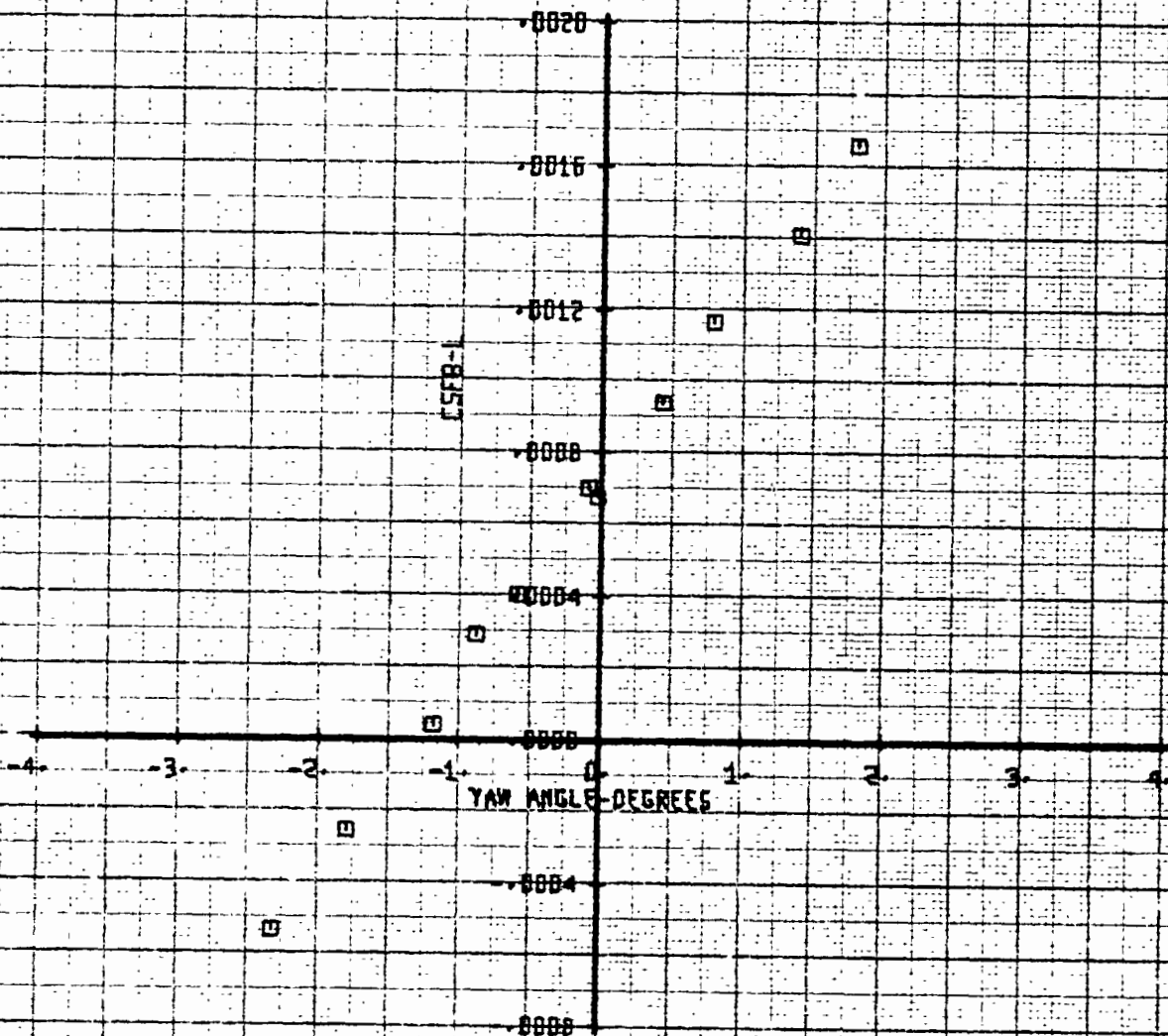


Figure 12-028. Left Rotor Side Force Coefficient Versus Yaw Angle ~ Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

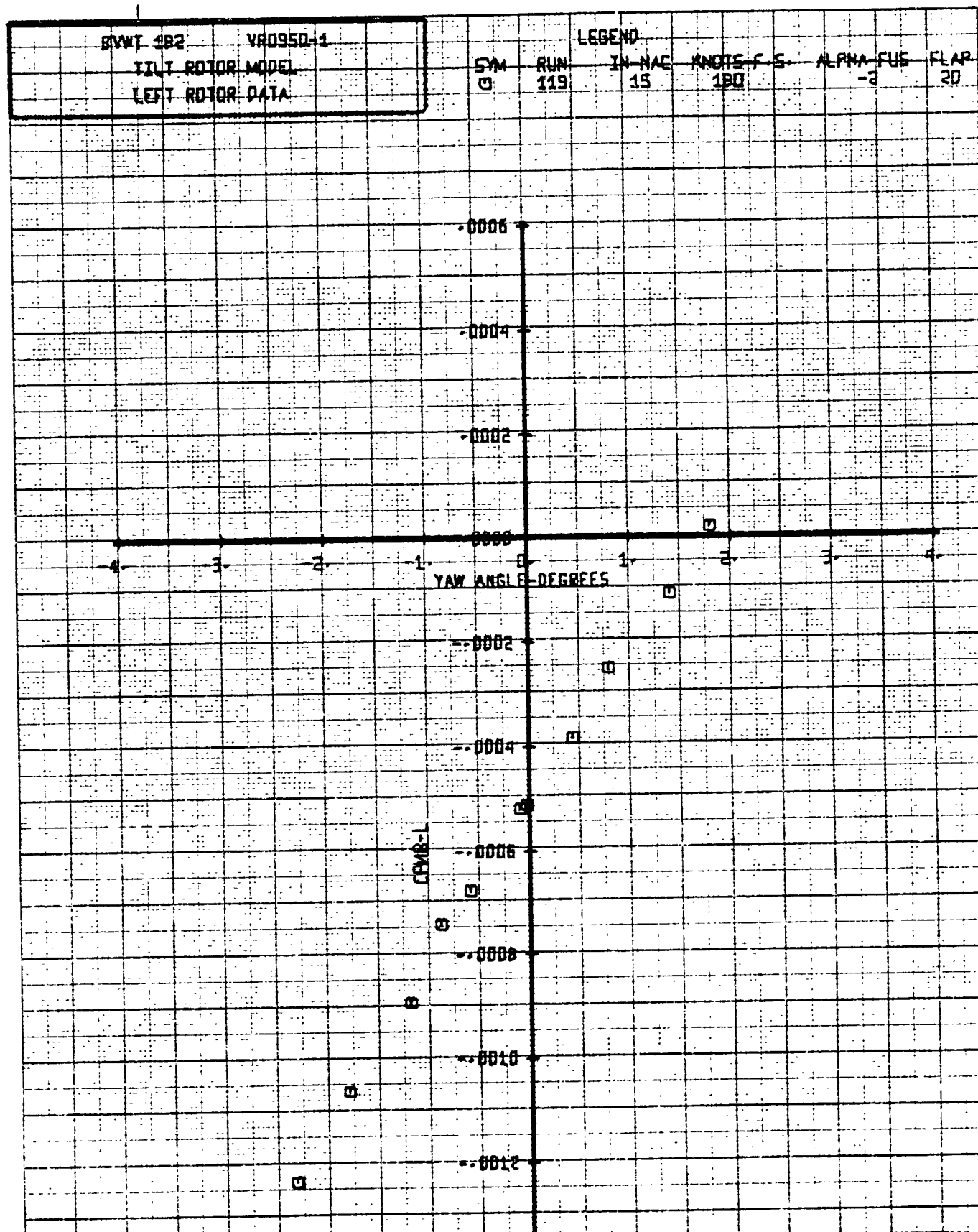


Figure 12-029. Left Rotor Pitching Moment Versus Yaw Angle~
Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

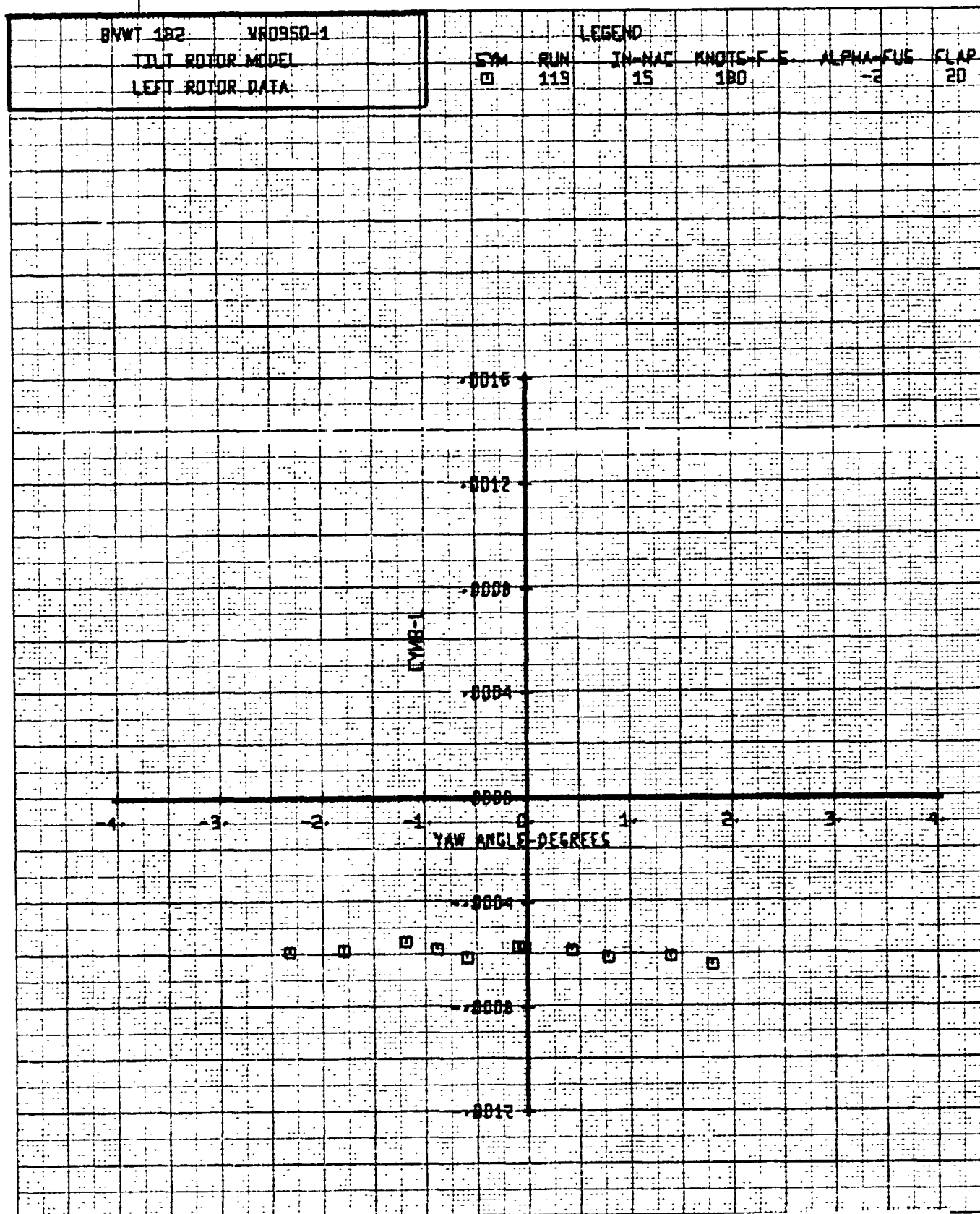
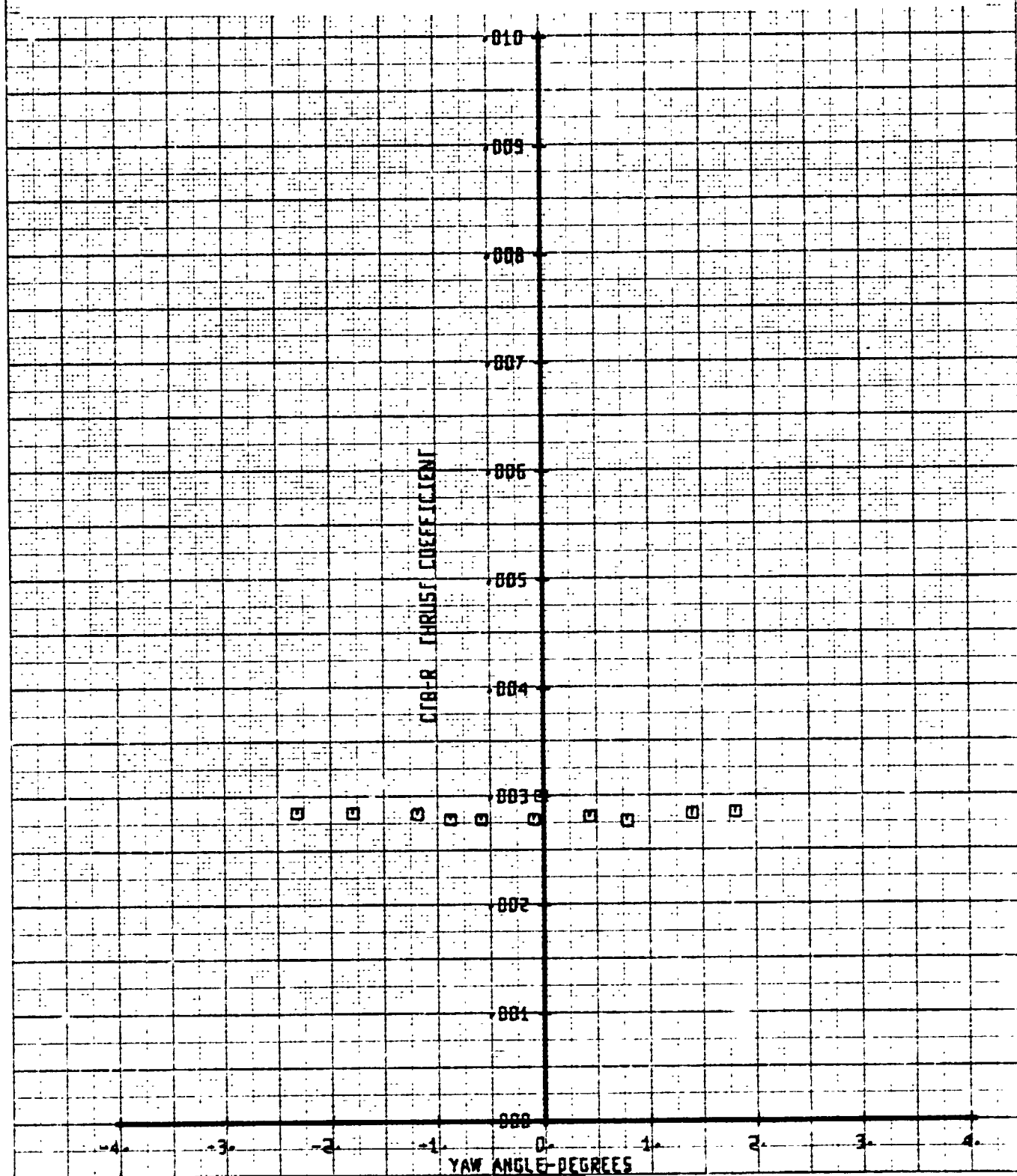


Figure 12-030. Left Rotor Yawing Moment Versus Yaw Angle ~ Degrees.
 $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

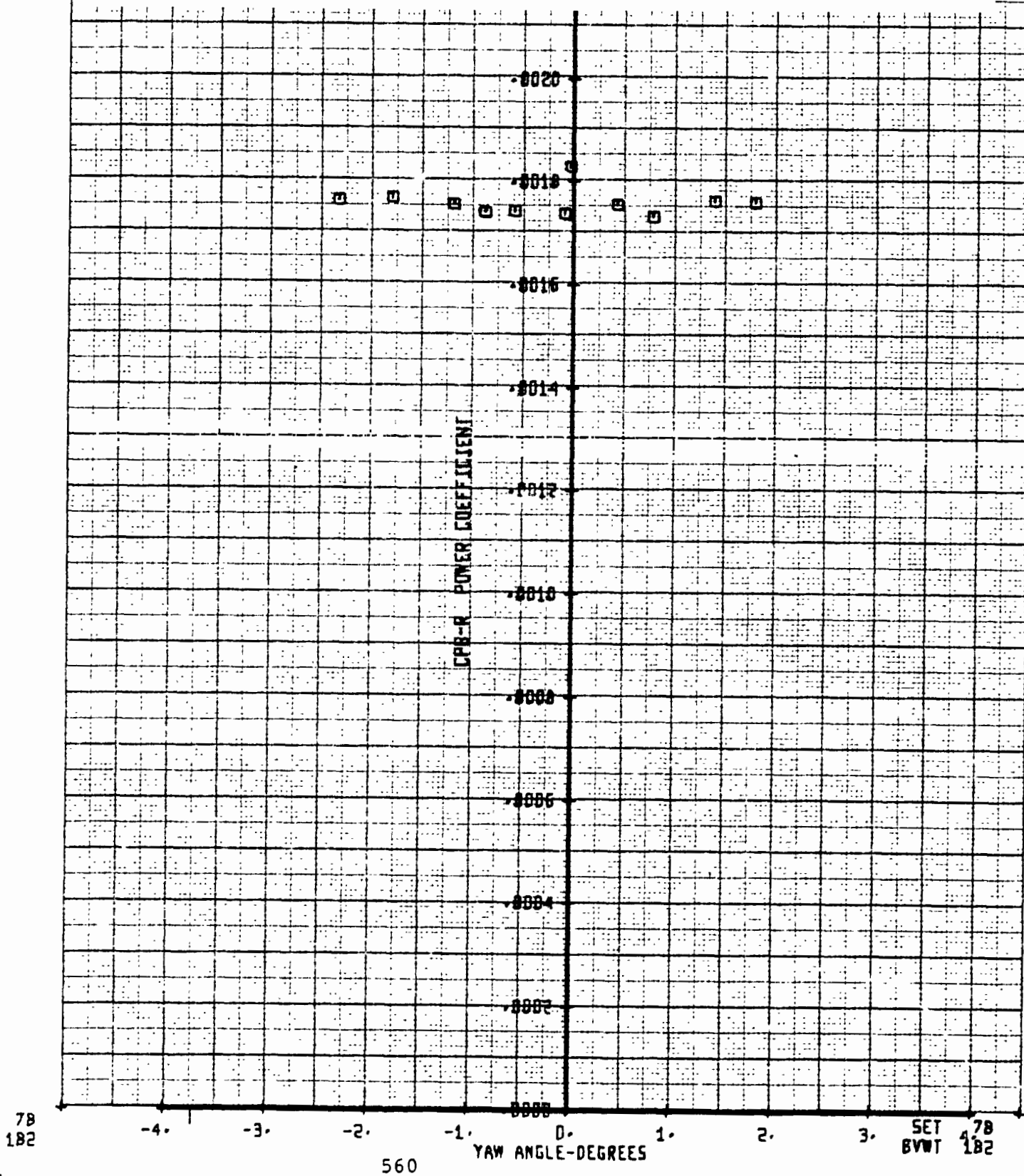
| | | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|------|
| BVWT 182 | VR095D-1 | LEGEND | | | | | |
| TILT ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FUS | FLAP |
| RIGHT ROTOR DATA | | □ | 119 | 15 | 180 | -2 | 20 |

Figure 12-031. Right Rotor Thrust Coefficient Versus Yaw Angle ~ Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.



| | | | | | | | |
|------------------|--|----------|--|--------|-----|--------|-----------|
| BVWT 182 | | VR0950-1 | | LEGEND | | | |
| TILT ROTOR MODEL | | | | SYM | RUN | IN-MAC | KNOTE-F-E |
| RIGHT ROTOR DATA | | | | 0 | 119 | 15 | 180 |
| | | | | | | | ALPHA-FUS |
| | | | | | | | -2 |
| | | | | | | | FLAP |
| | | | | | | | 20 |

Figure 12-032. Right Rotor Power Coefficient Versus Yaw Angle~
Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.



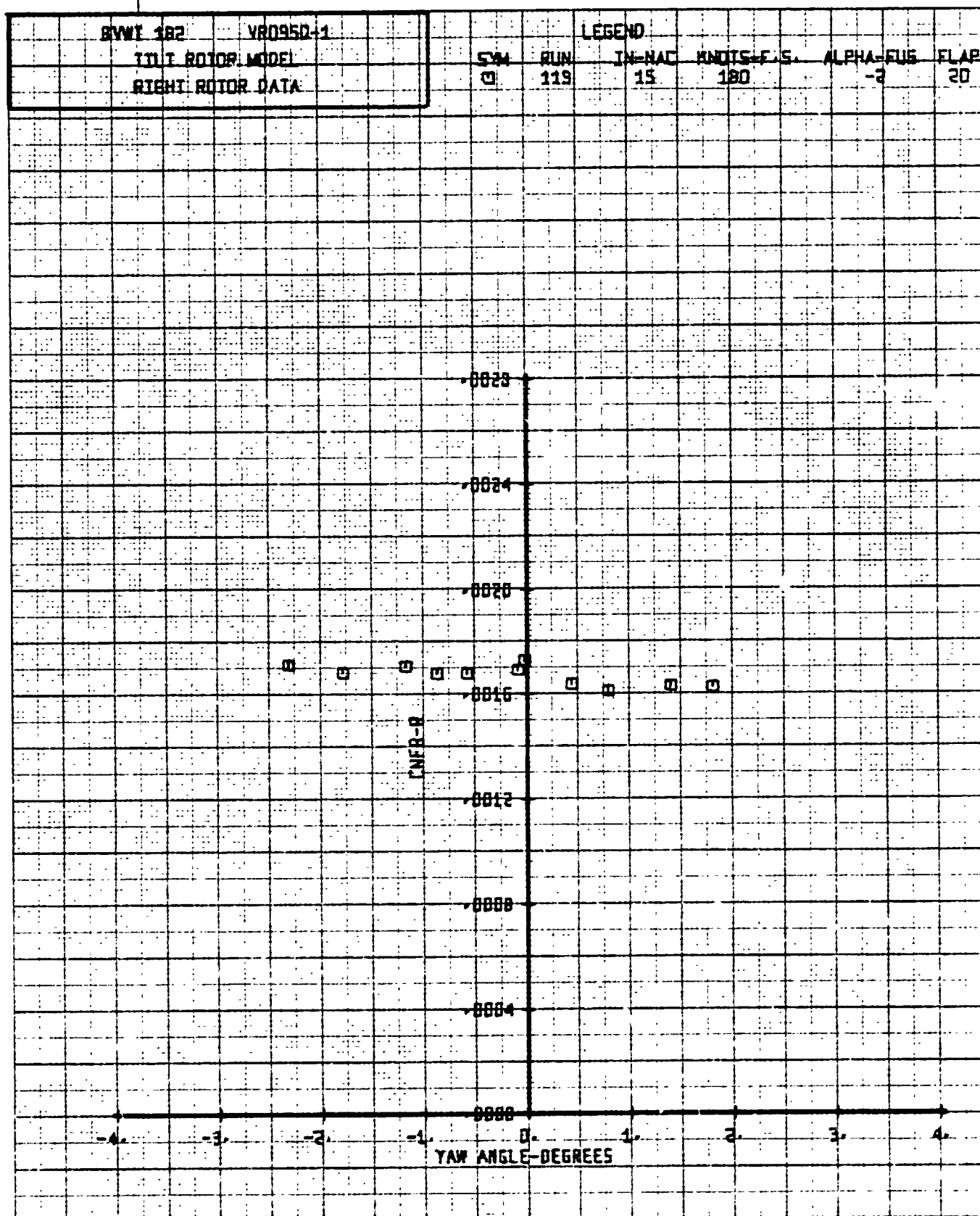
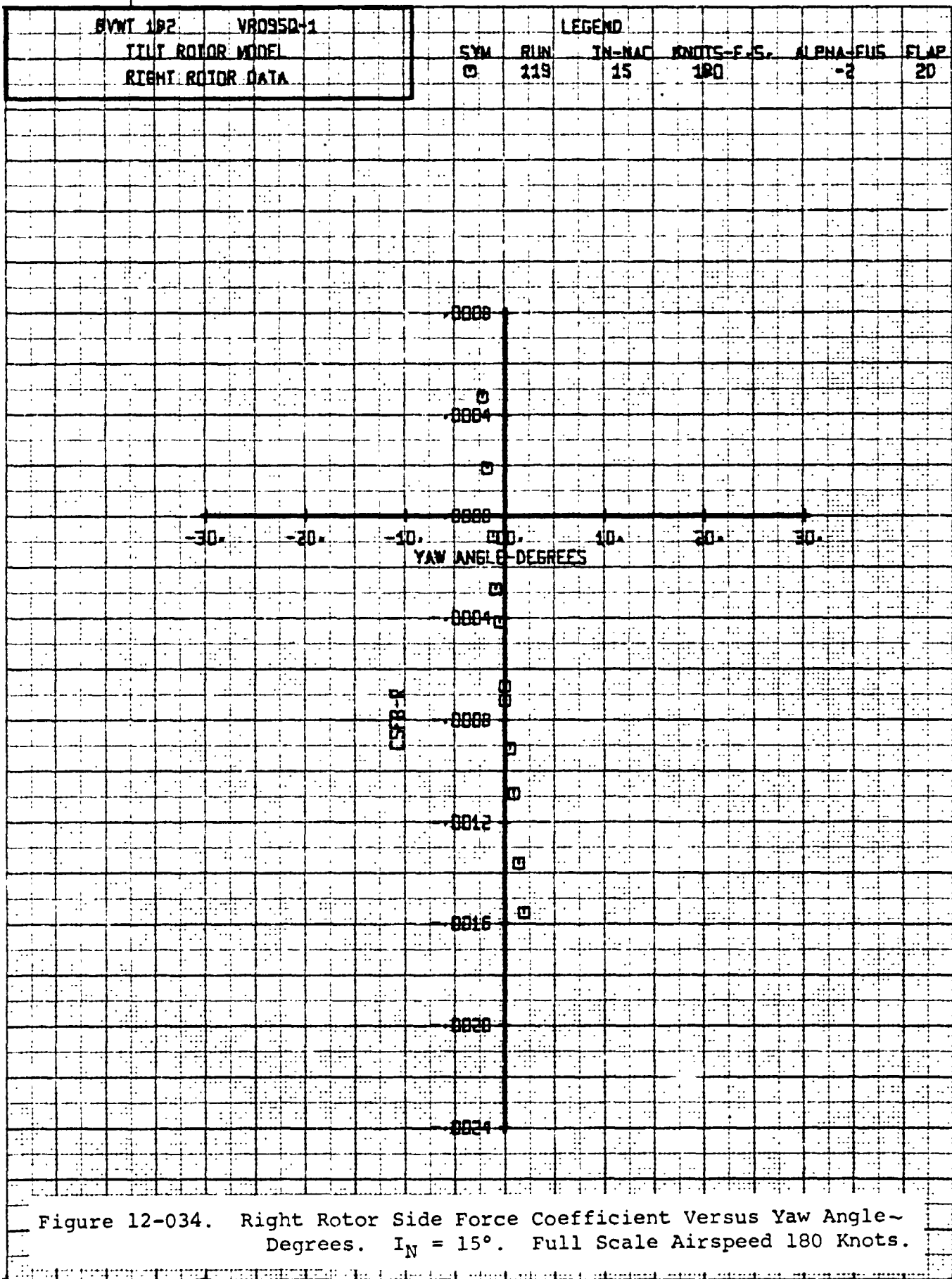


Figure 12-033. Right Rotor Normal Force Coefficient Versus Yaw Angle ~ Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.



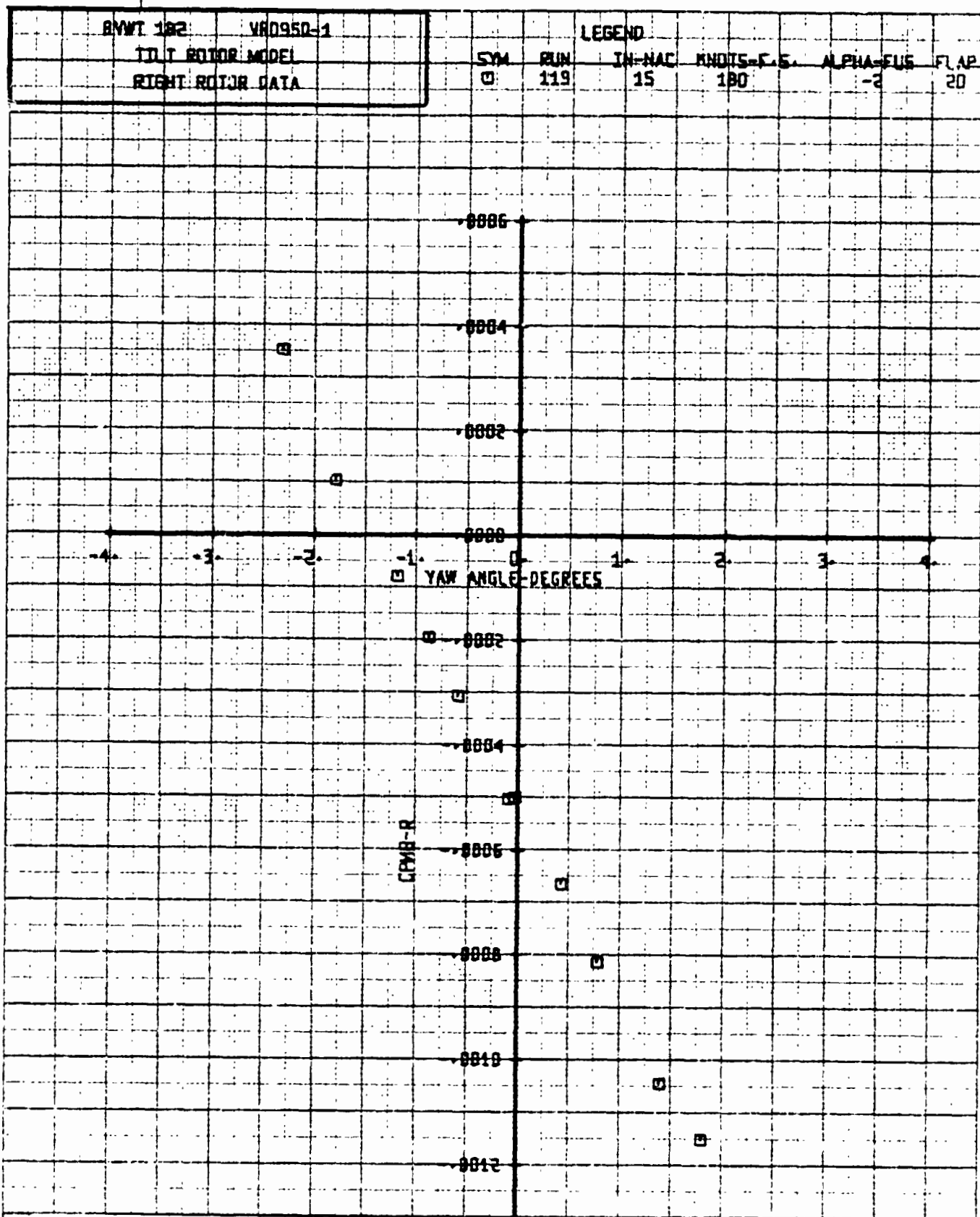


Figure 12-035. Right Rotor Pitching Moment Versus Yaw Angle ~ Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

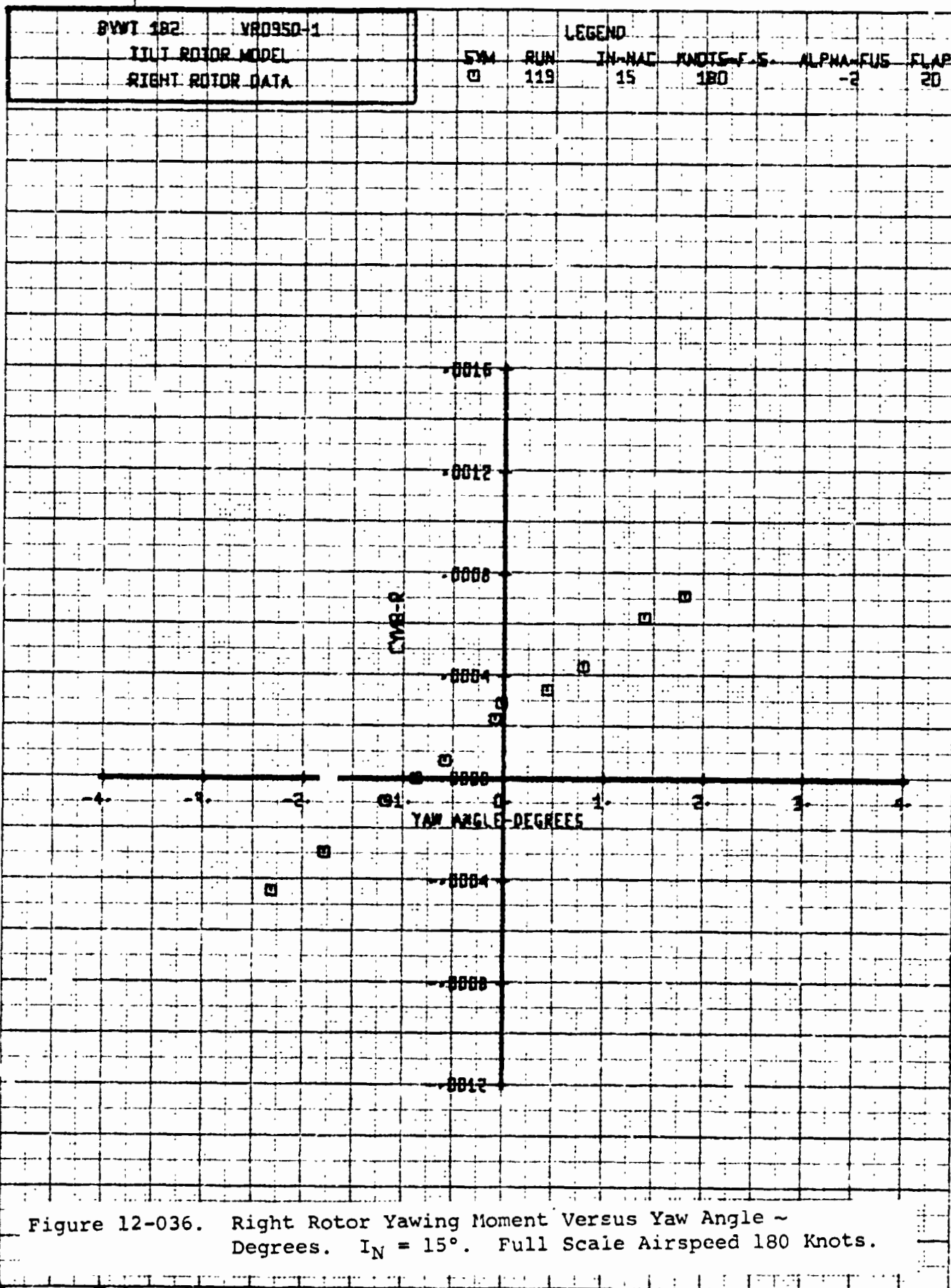
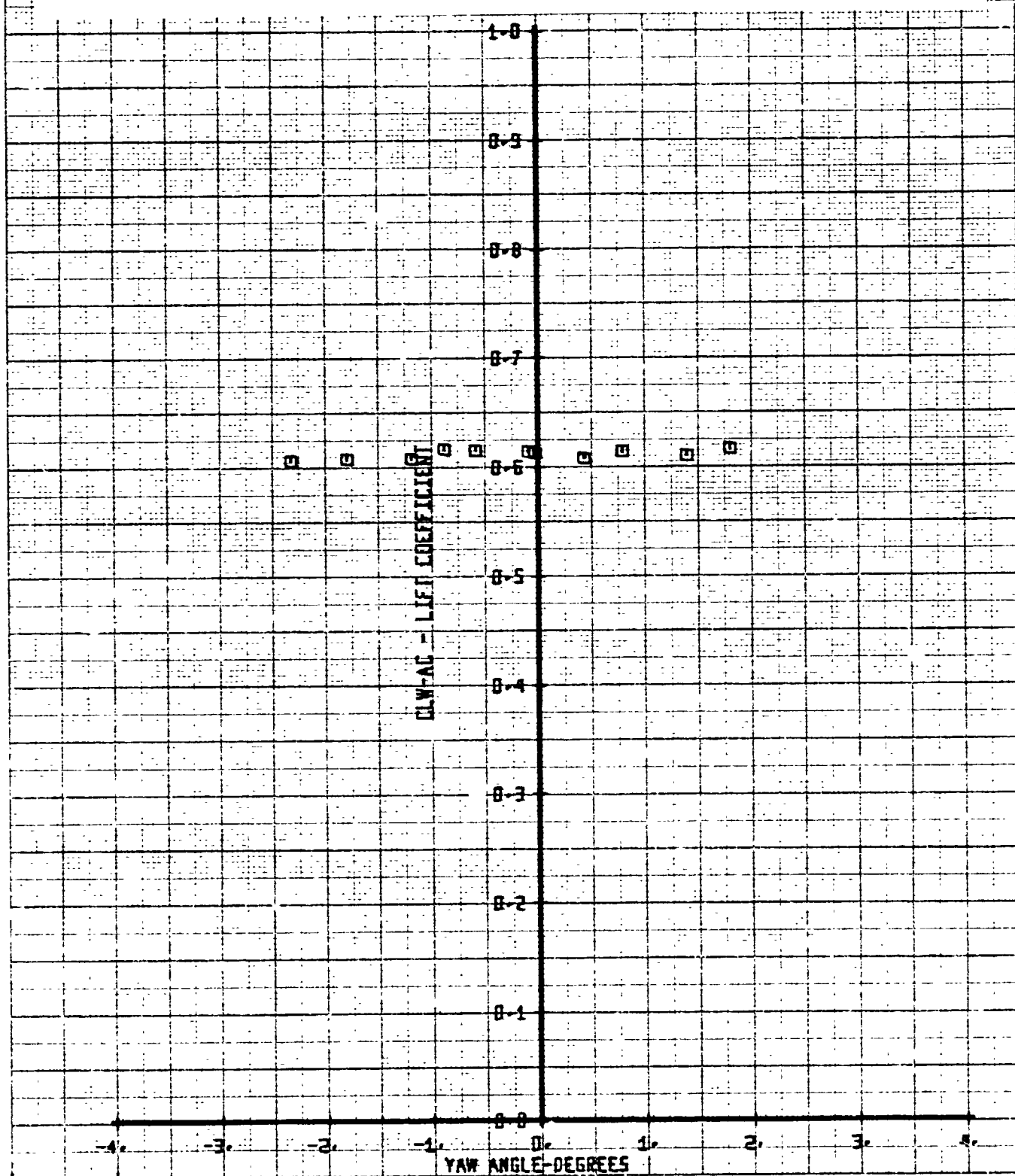


Figure 12-036. Right Rotor Yawing Moment Versus Yaw Angle ~ Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

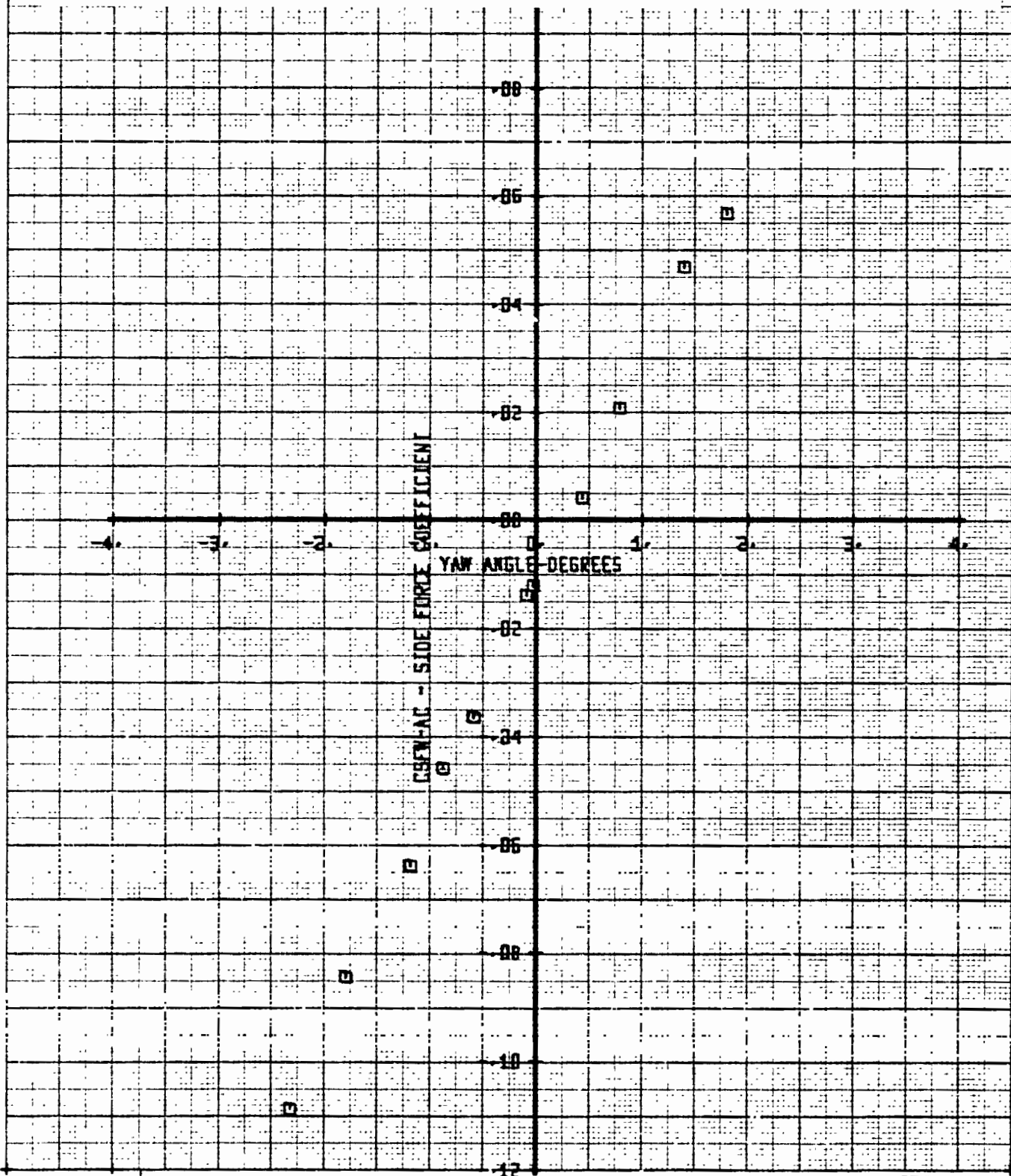
| | | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|------|
| BVWT 182 | VR0950-1 | LEGEND | | | | | |
| TILT ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FUS | FLAP |
| | | □ | 119 | 15 | 180 | -2 | 20 |

Figure 12-037. Aircraft Lift Coefficient Versus Yaw Angle ~Degrees.
 $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.



| | | | | | | | | | |
|------------------|--|----------|--|--------|-----|--------|------------|-----------|------|
| BVWT 182 | | VR0950-1 | | LEGEND | | | | | |
| TILT ROTOR MODEL | | | | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FUS | FLAP |
| | | | | □ | 119 | 15 | 180 | -2 | 20 |

Figure 12-038. Aircraft Side Force Coefficient Versus Yaw Angle~
Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.



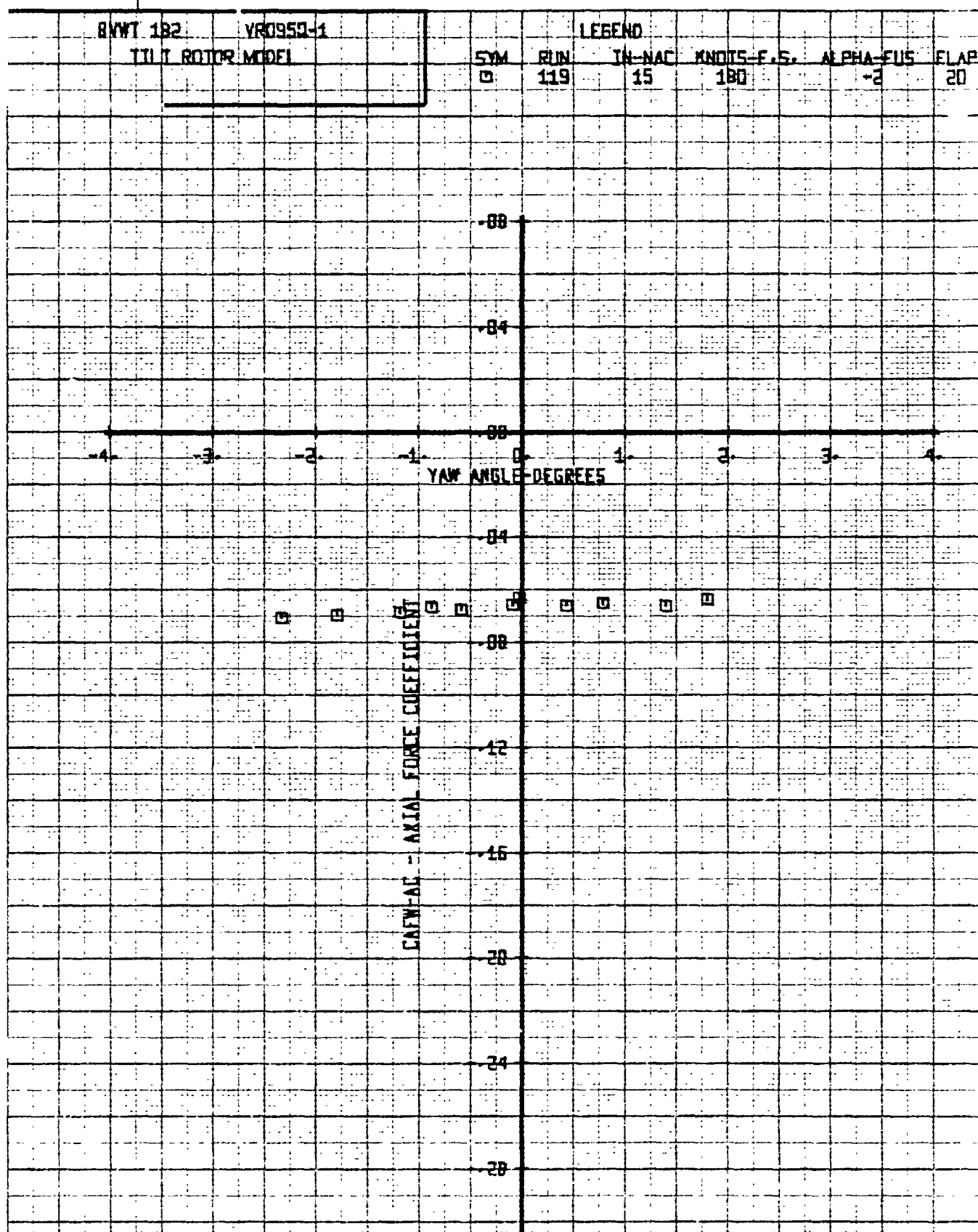


Figure 12-039. Aircraft Axial Force Coefficient Versus Yaw Angle ~ Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

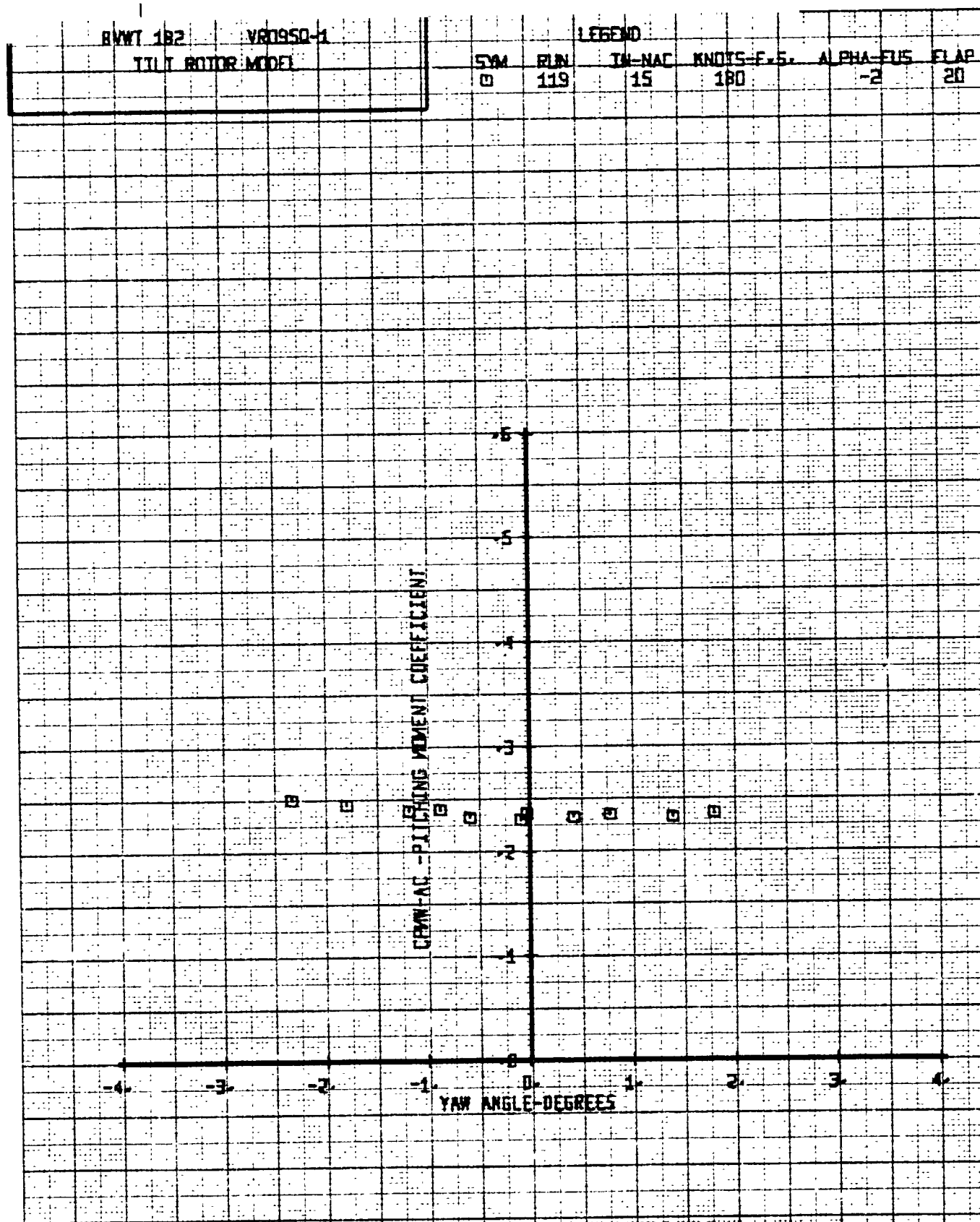


Figure 12-040. Aircraft Pitching Moment Versus Yaw Angle ~ Degrees.
 $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

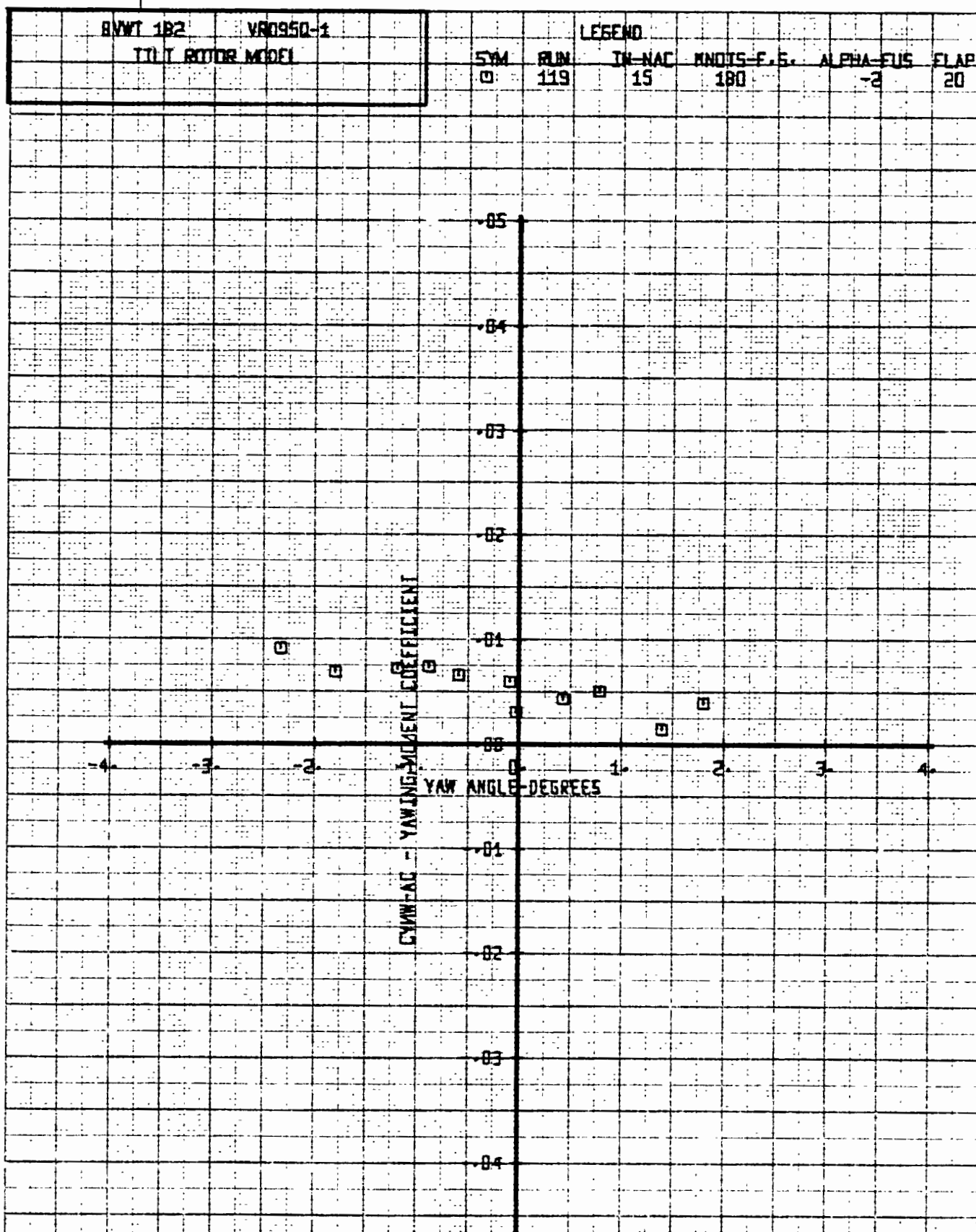
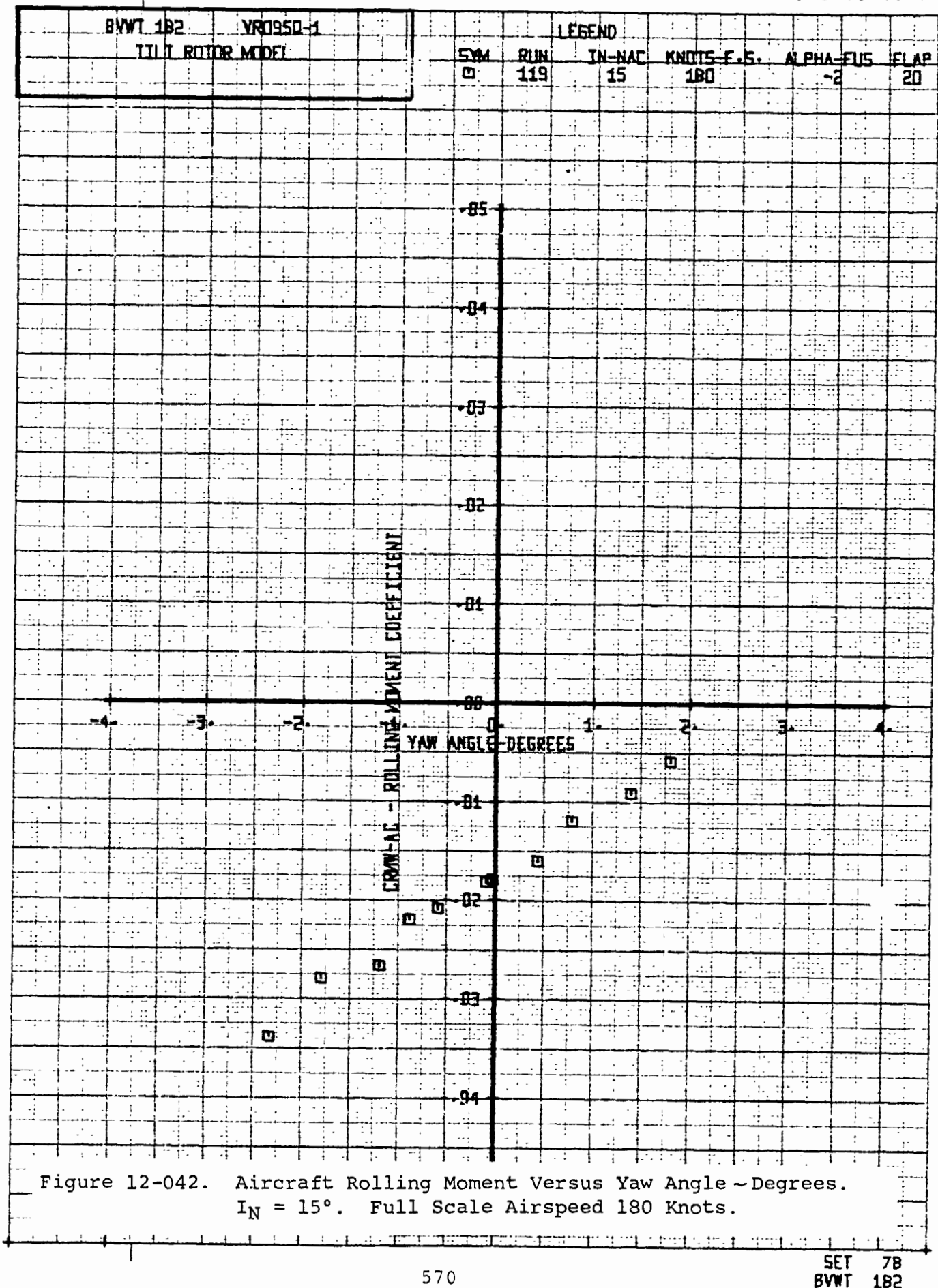


Figure 12-041. Aircraft Yawing Moment Versus Yaw Angle ~Degrees.
 $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.



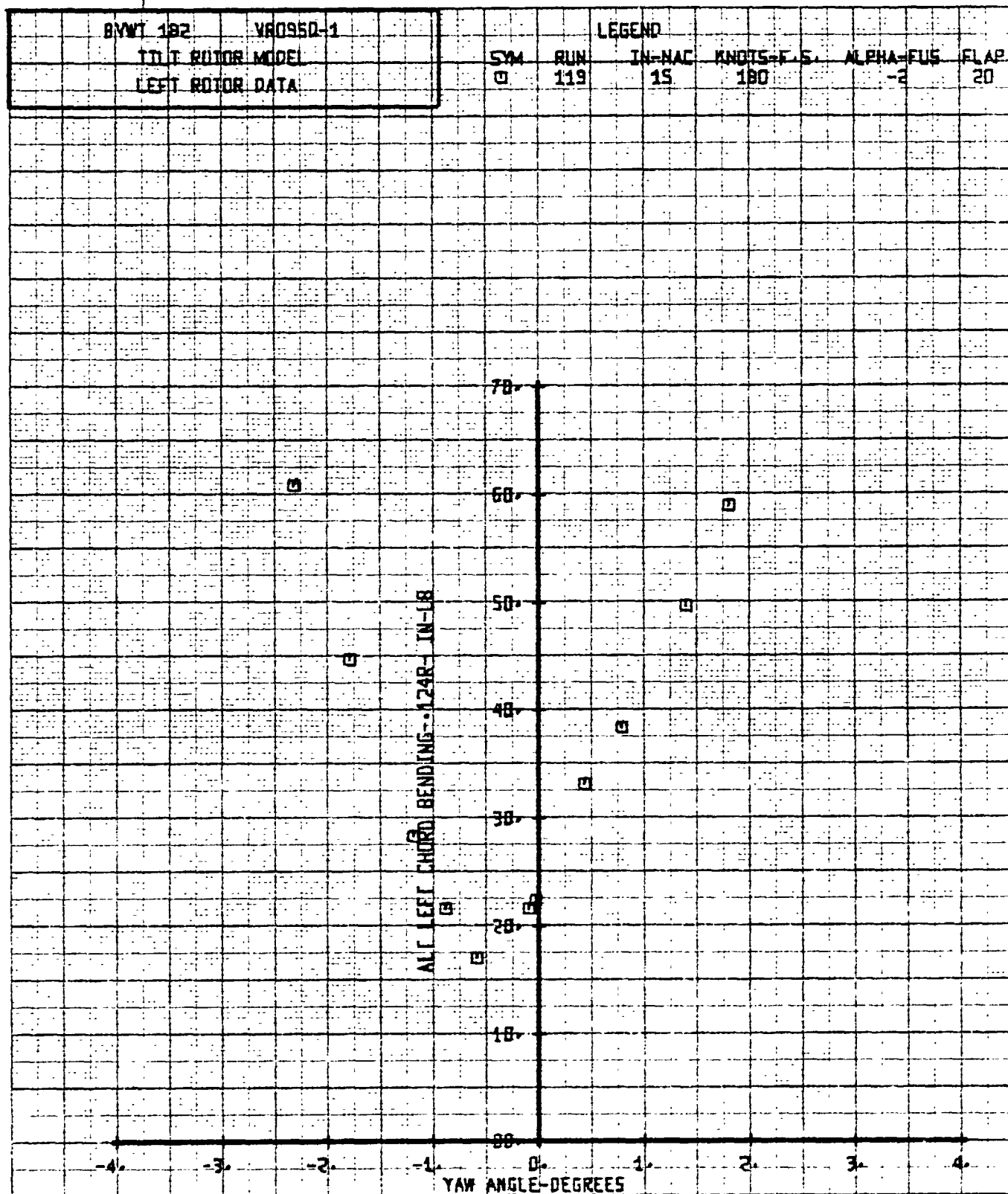
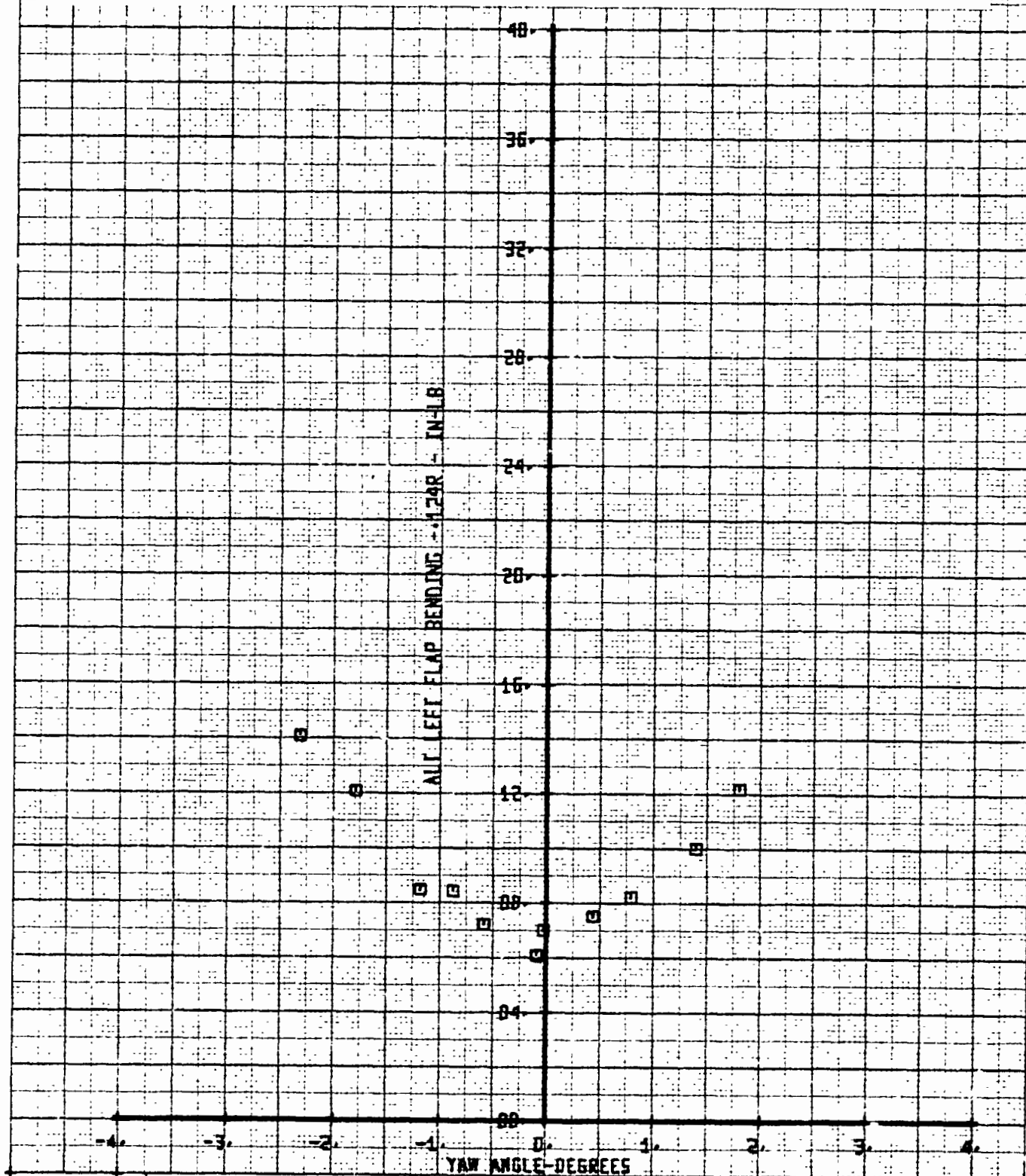


Figure 12-043. Alt. Left Chord Bending Versus Yaw Angle - Degrees.
 $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

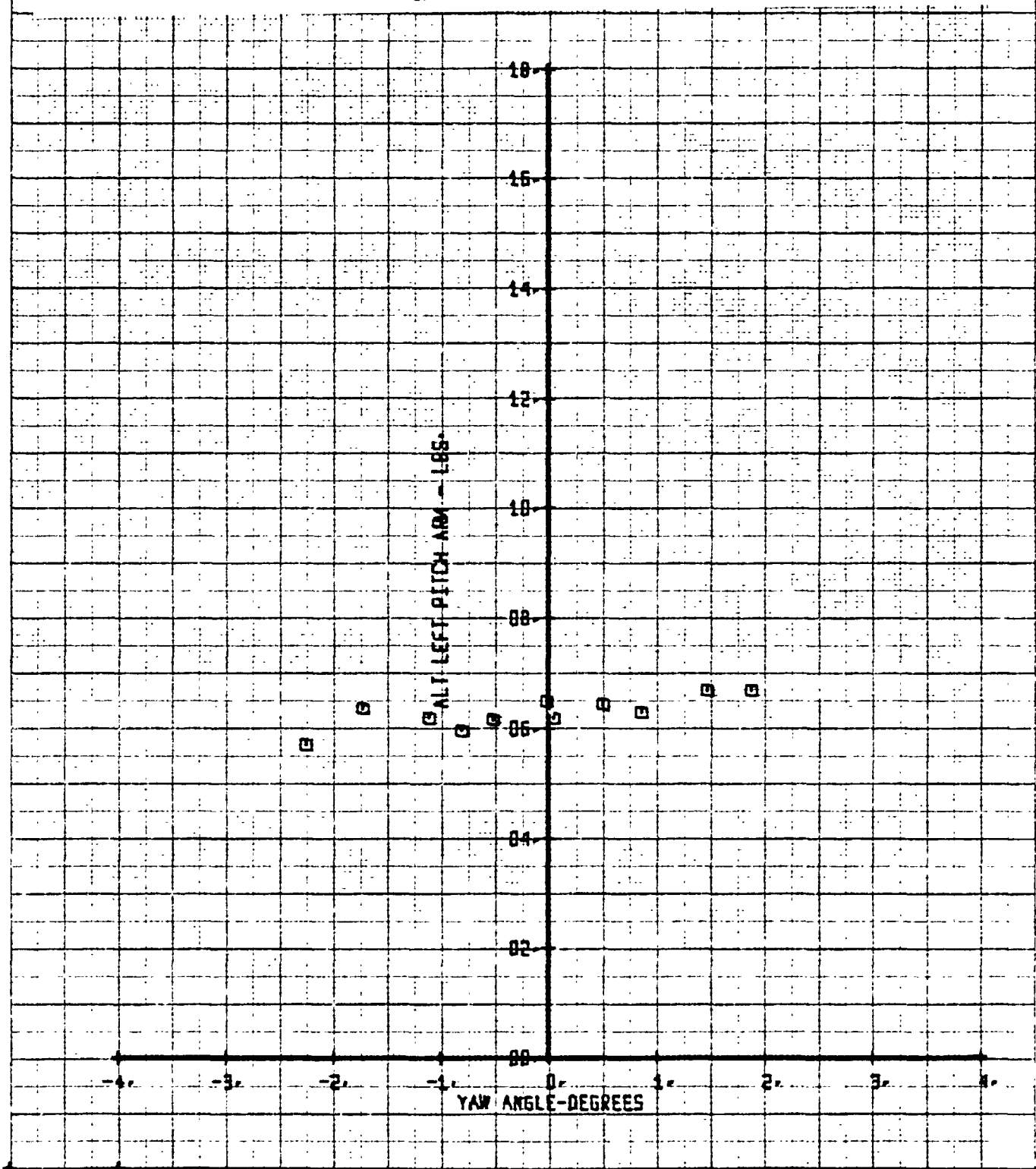
| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | VR0950-1 | LEGEND | | | | |
| ITIJ ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FUS |
| LEFT ROTOR DATA | | 0 | 119 | 15 | 180 | -2 |
| | | | | | | FLAP 20 |

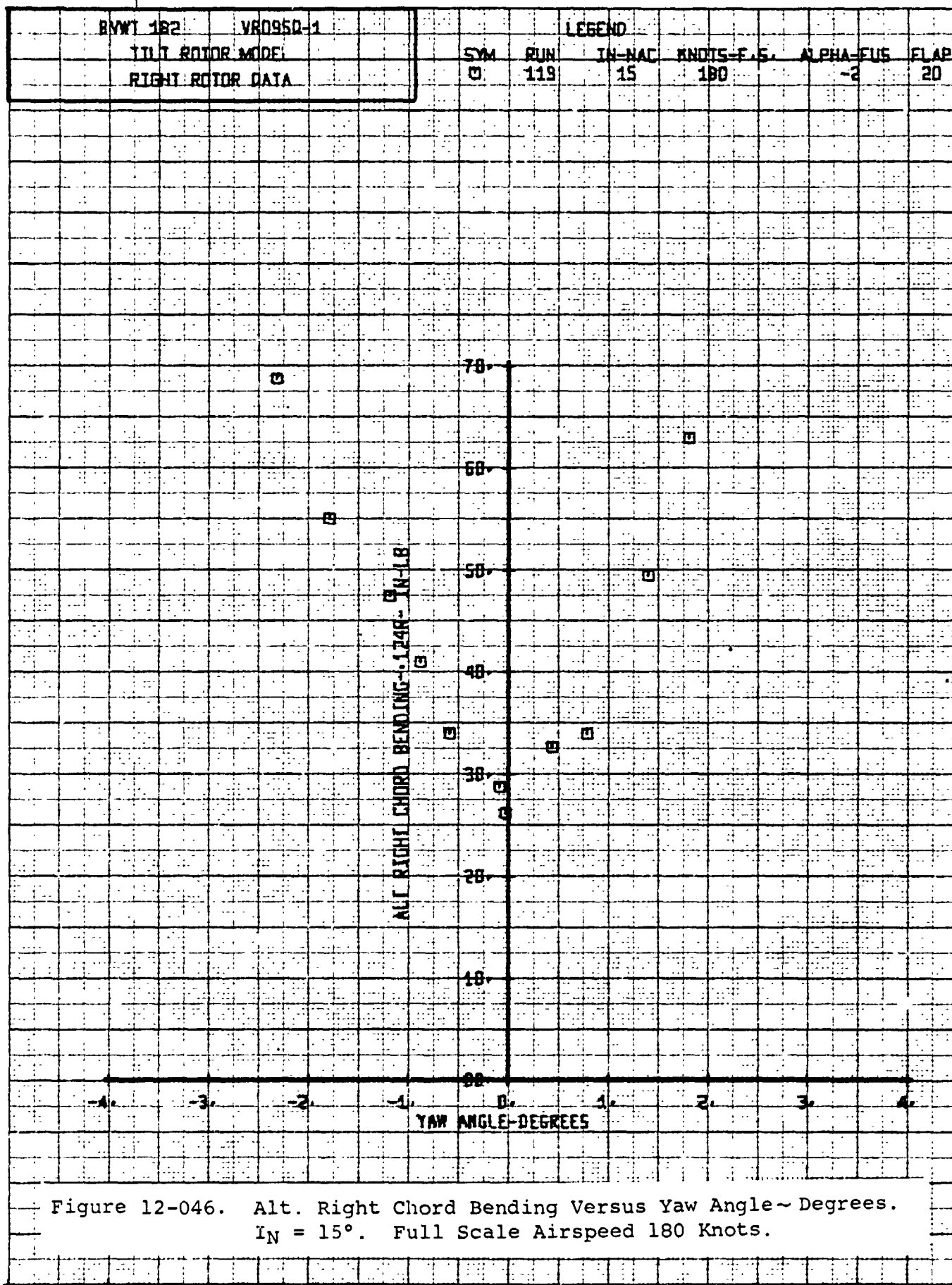
Figure 12-044. Alt. Left Flap Bending Versus Yaw Angle ~Degrees.
 $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.



| | | | | | | |
|------------------|-----------|--------|-----|--------|------------|-----------|
| BVWT 182 | VR09512-1 | LEGEND | | | | |
| TILT ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FUS |
| LEFT ROTOR DATA | | 0 | 119 | 15 | 180 | -2 |
| | | | | | | FLAP 20 |

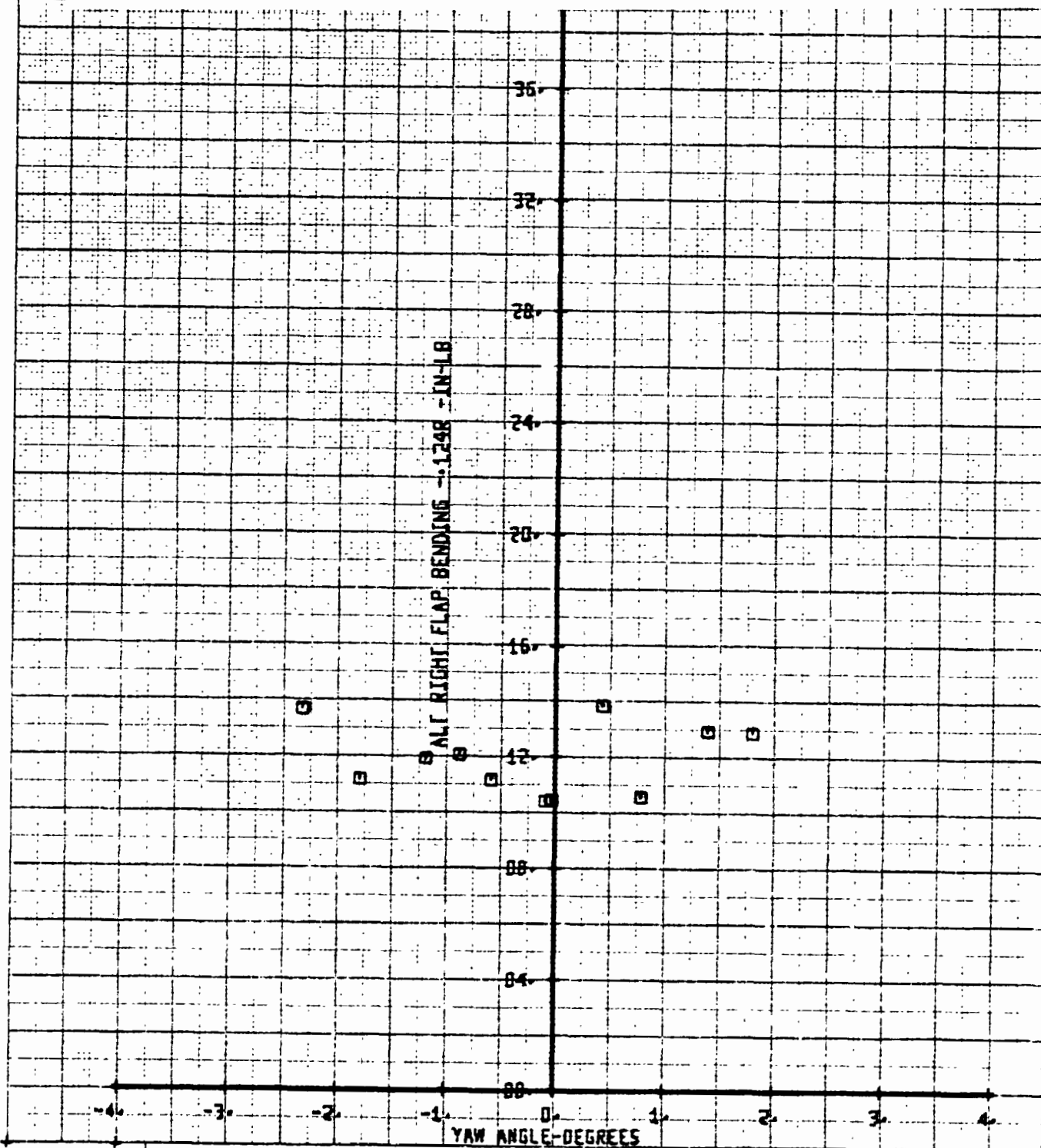
Figure 12-045. Alt. Left Pitch Link Load Versus Yaw Angle~
Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.





| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | VR0950-1 | LEGEND | | | | |
| TILT ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FUS |
| RIGHT ROTOR DATA | | □ | 119 | 15 | 180 | -2 |
| | | | | | | FLAP 20 |

Figure 12-047. Alt. Right Flap Bending Versus Yaw Angle - Degrees.
 $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.



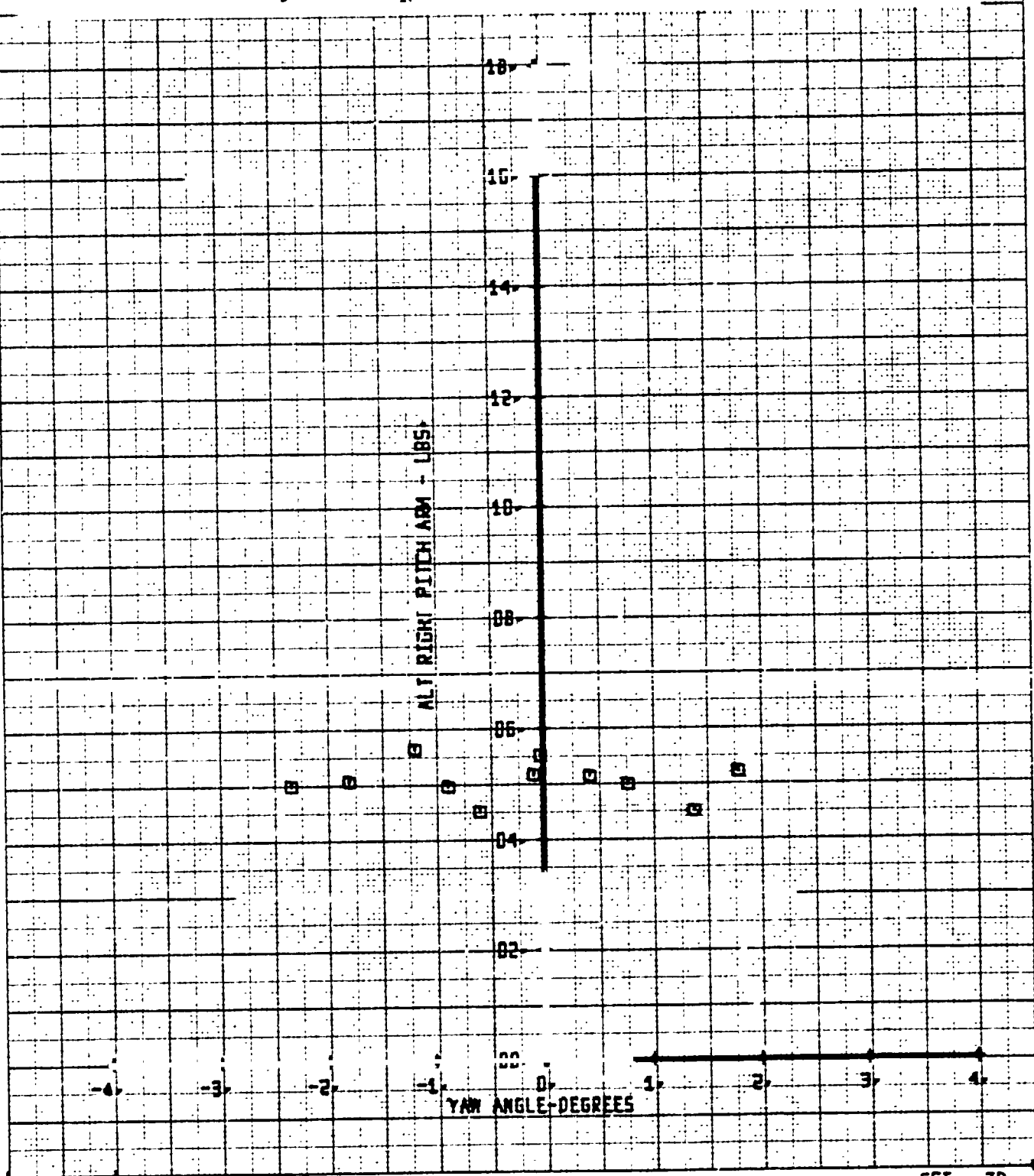
17-015

D238-10000-3

BYWT 182 VR0950-1
 YTH ROTOR MODFL
 RIGHT ROTOR DATA

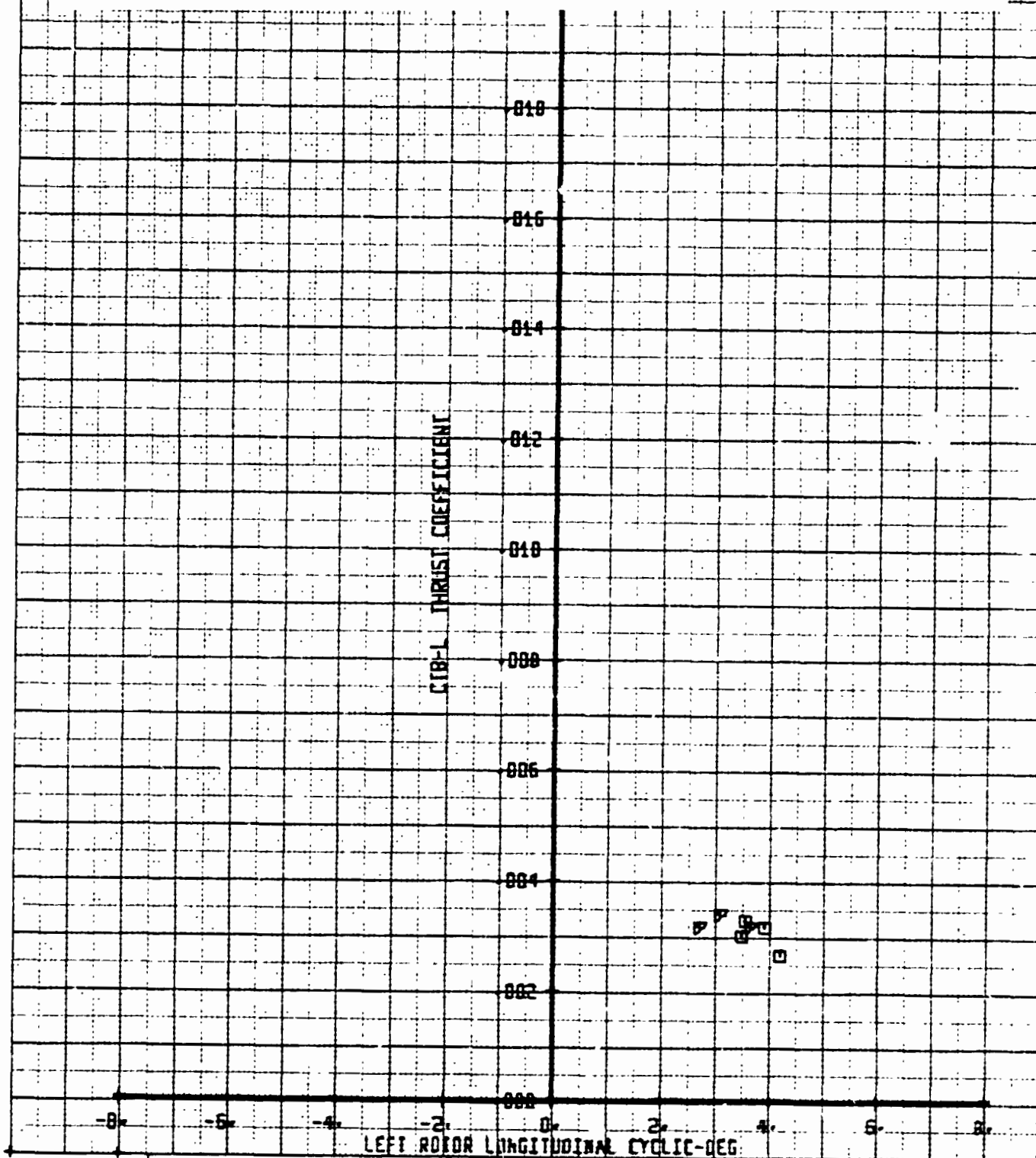
| LEGEND | | | | | |
|--------|-----|--------|------------|-----------------|------|
| SY: | RUN | IN-NAC | KNOTS-F.S. | ALPHA- \pm US | FLAP |
| 0 | 119 | 15 | 180 | -2 | 20 |

Figure 12-048. Alt. Right Pitch Link Load Versus Yaw Angle - Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.



| | | | | | | | |
|------------------|--|----------|--|--------|------|--------|------------|
| BVWT 182 | | VR0950-1 | | LEGEND | | | |
| TILT ROTOR MODEL | | | | SYM | BLIN | IN-MAC | KNOTS-F.S. |
| LEFT ROTOR DATA | | | | □ | 121 | 15 | 180 |
| | | | | ▽ | 122 | | |
| | | | | | | | ALPHA-FUS |
| | | | | | | | -2 |
| | | | | | | | FLAP |
| | | | | | | | 20 |

Figure 12-049. Left Rotor Thrust Coefficient Versus Left Rotor Long. Cyclic ~ Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.



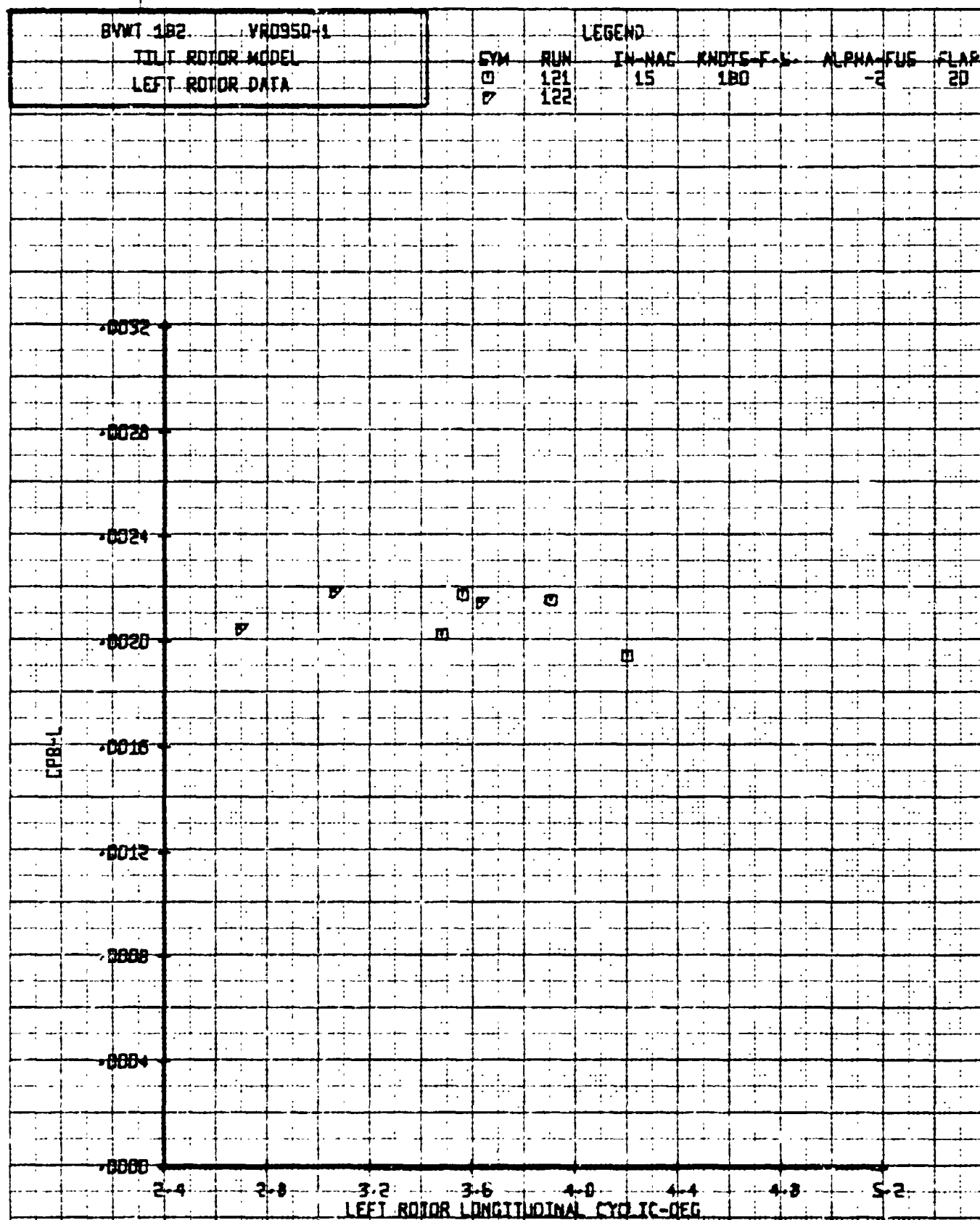


Figure 12-050. Left Rotor Power Coefficient Versus Left Rotor Long. Cyclic ~Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

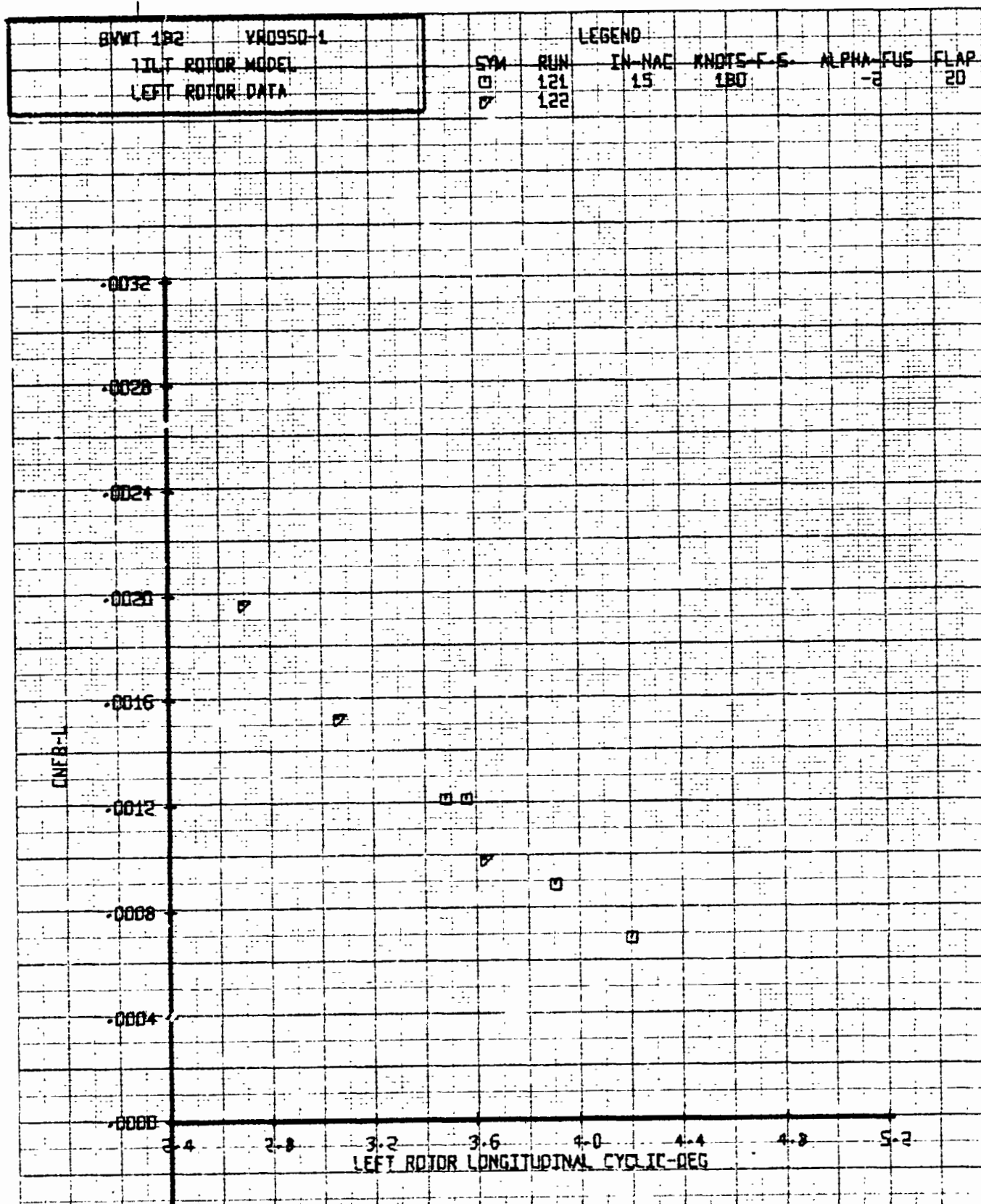
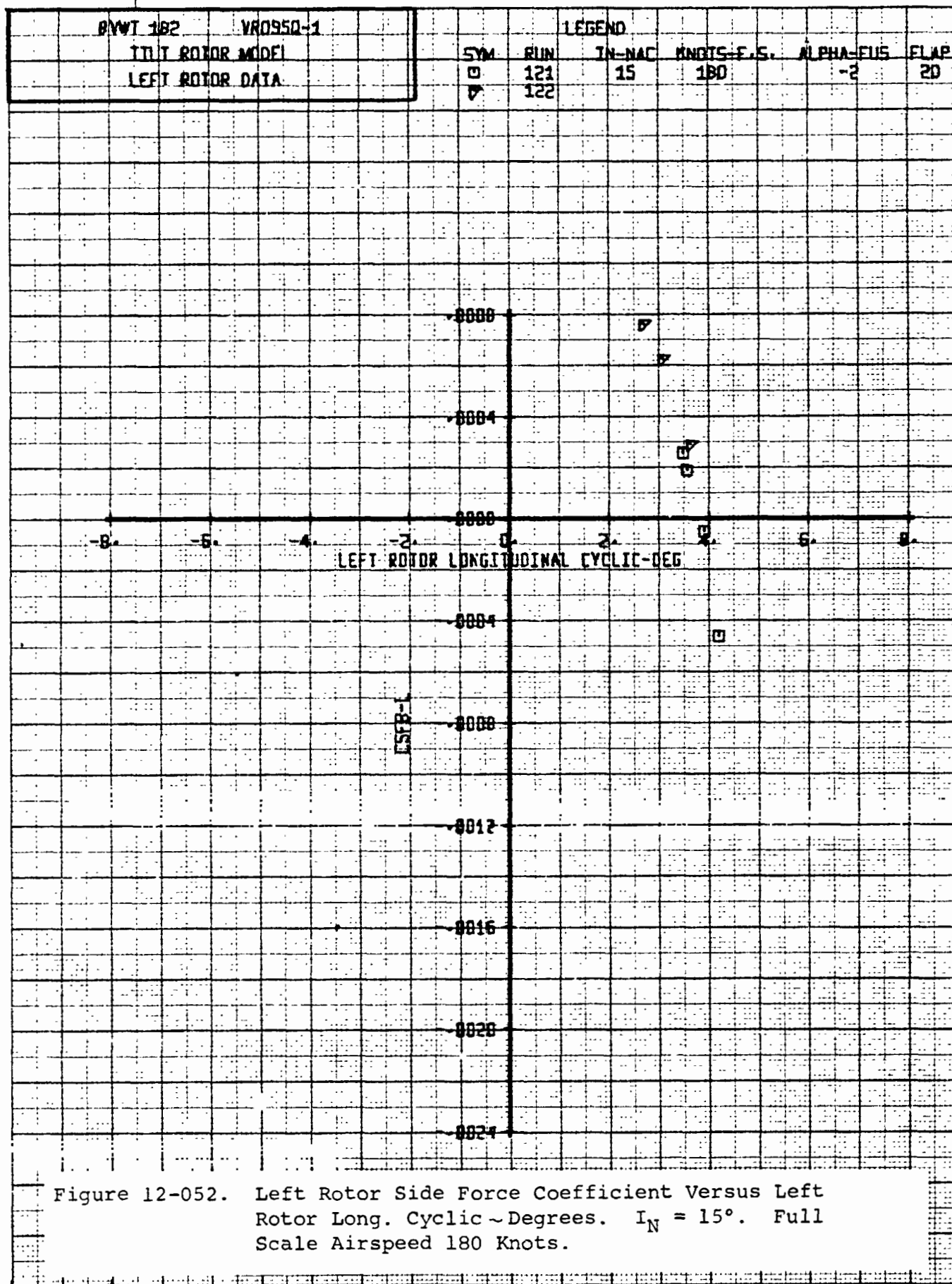
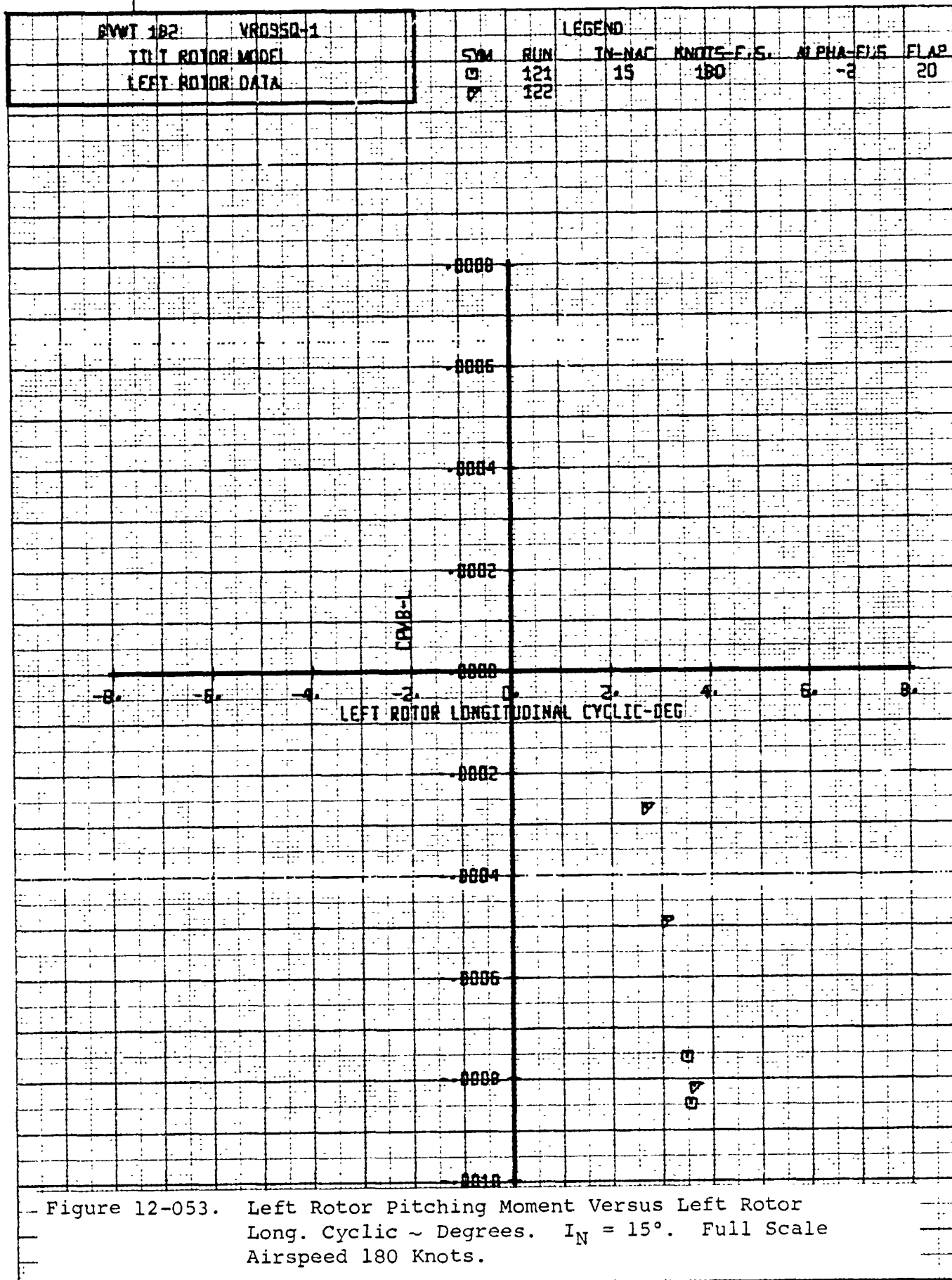
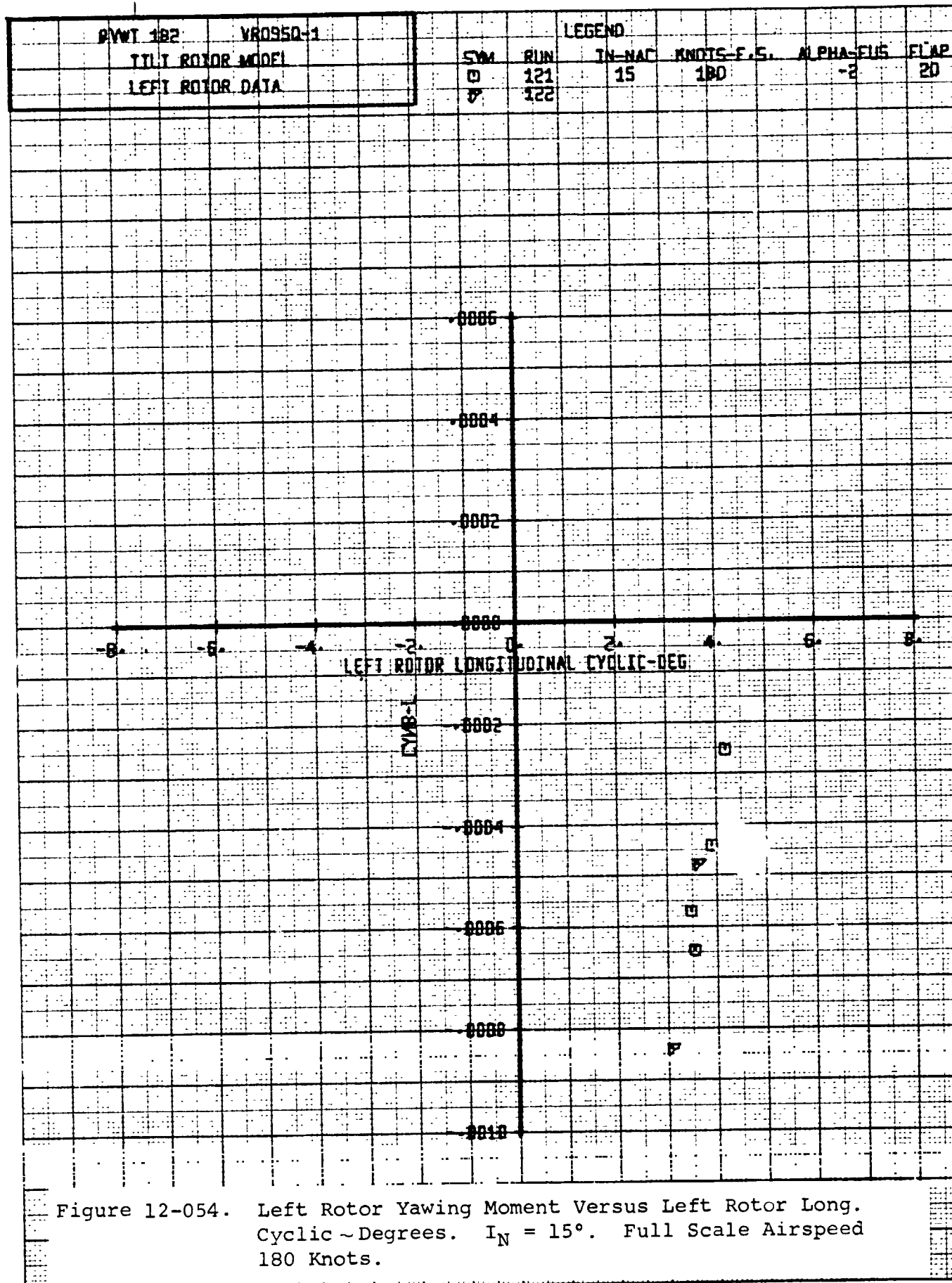


Figure 12-051. Left Rotor Normal Force Coefficient Versus Left Rotor Long. Cyclic ~ Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

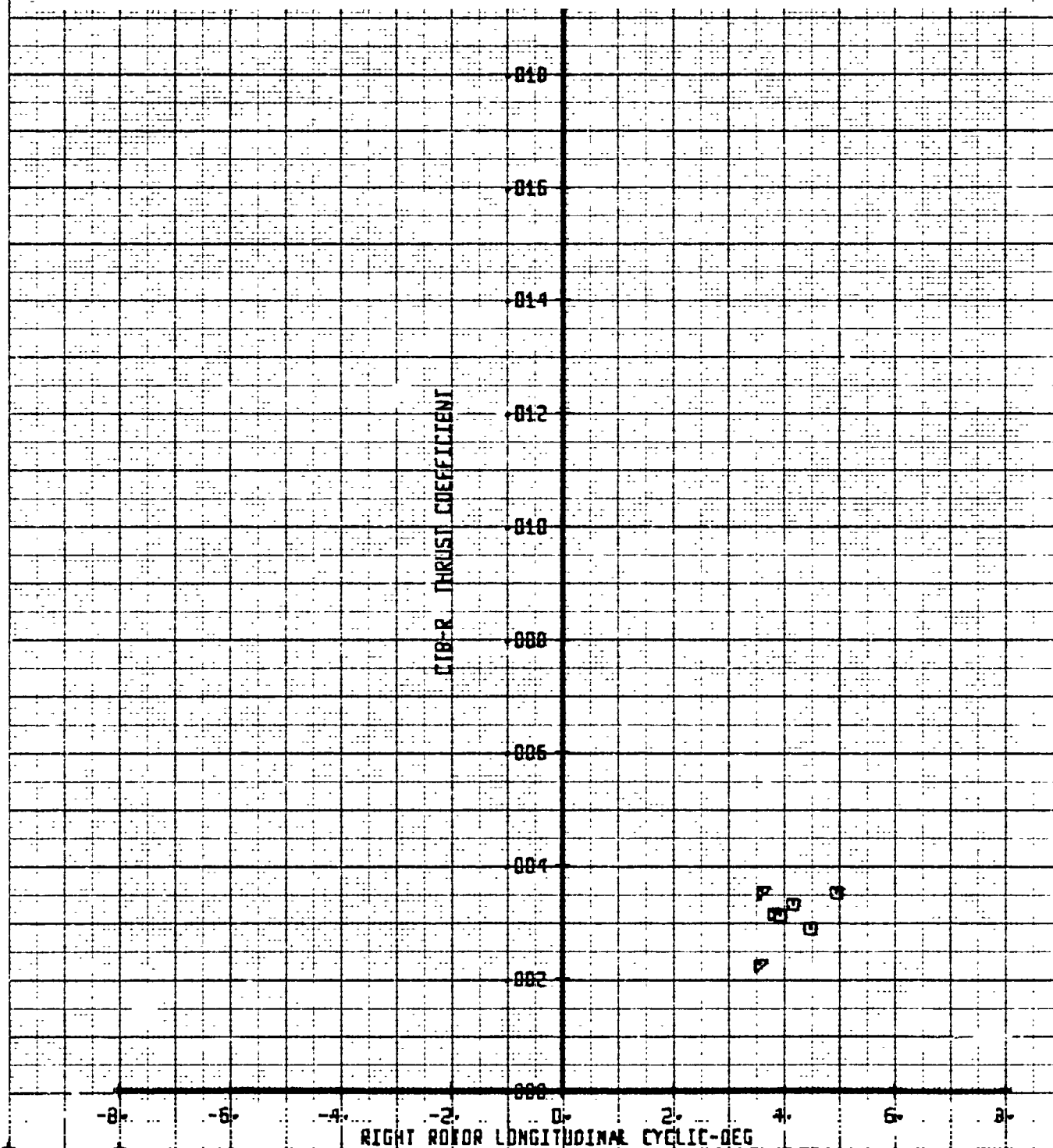






| | | | | | | |
|------------------|----------|--------|-----|--------|------------|------------|
| BVWT 182 | VR0950-1 | LEGEND | | | | |
| YILT ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FLU5 |
| RIGHT ROTOR DATA | | 0 | 121 | 15 | 180 | -2 |
| | | 1 | 122 | | | 20 |

Figure 12-055. Right Rotor Thrust Coefficient Versus Right Rotor Long. Cyclic~Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.



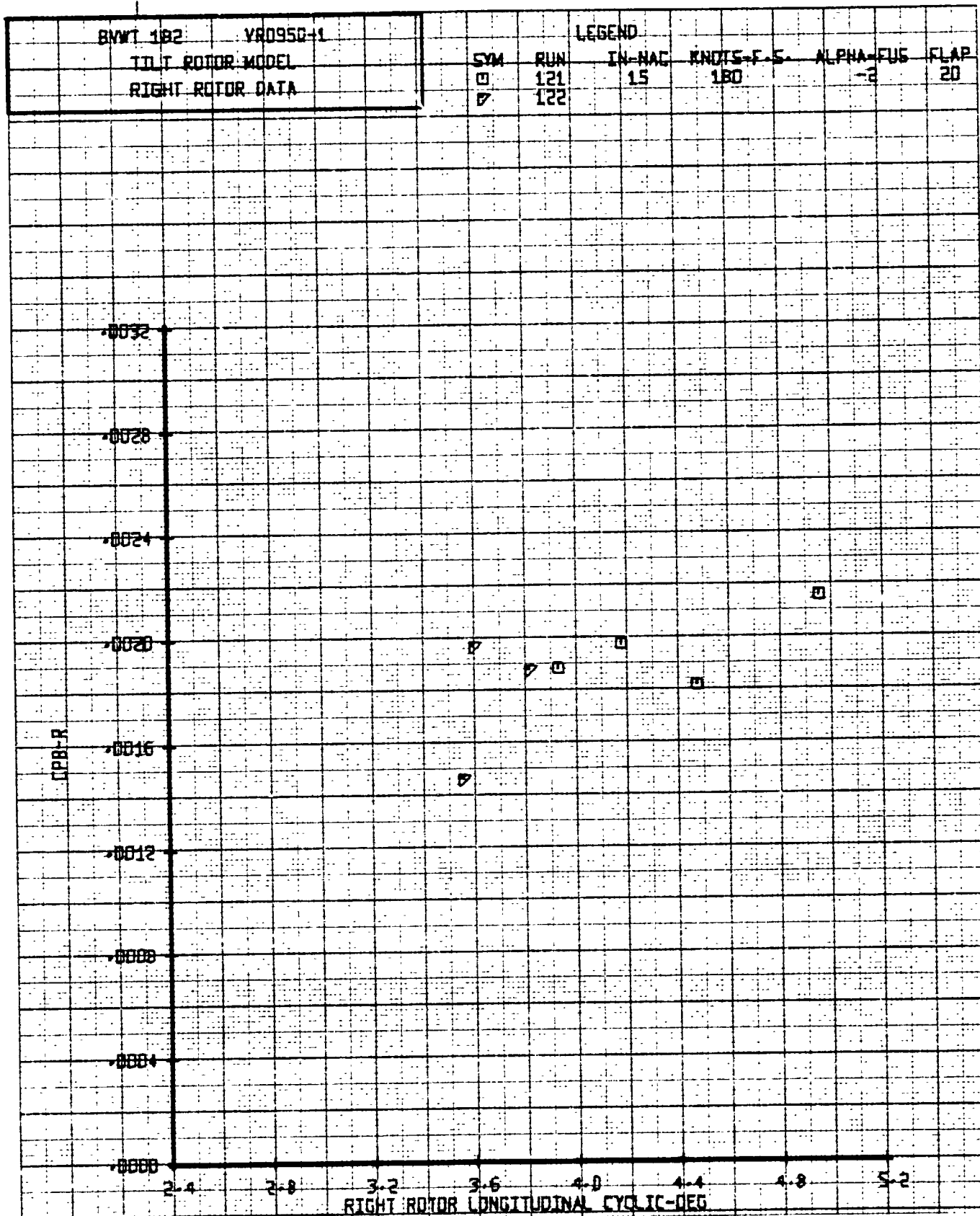
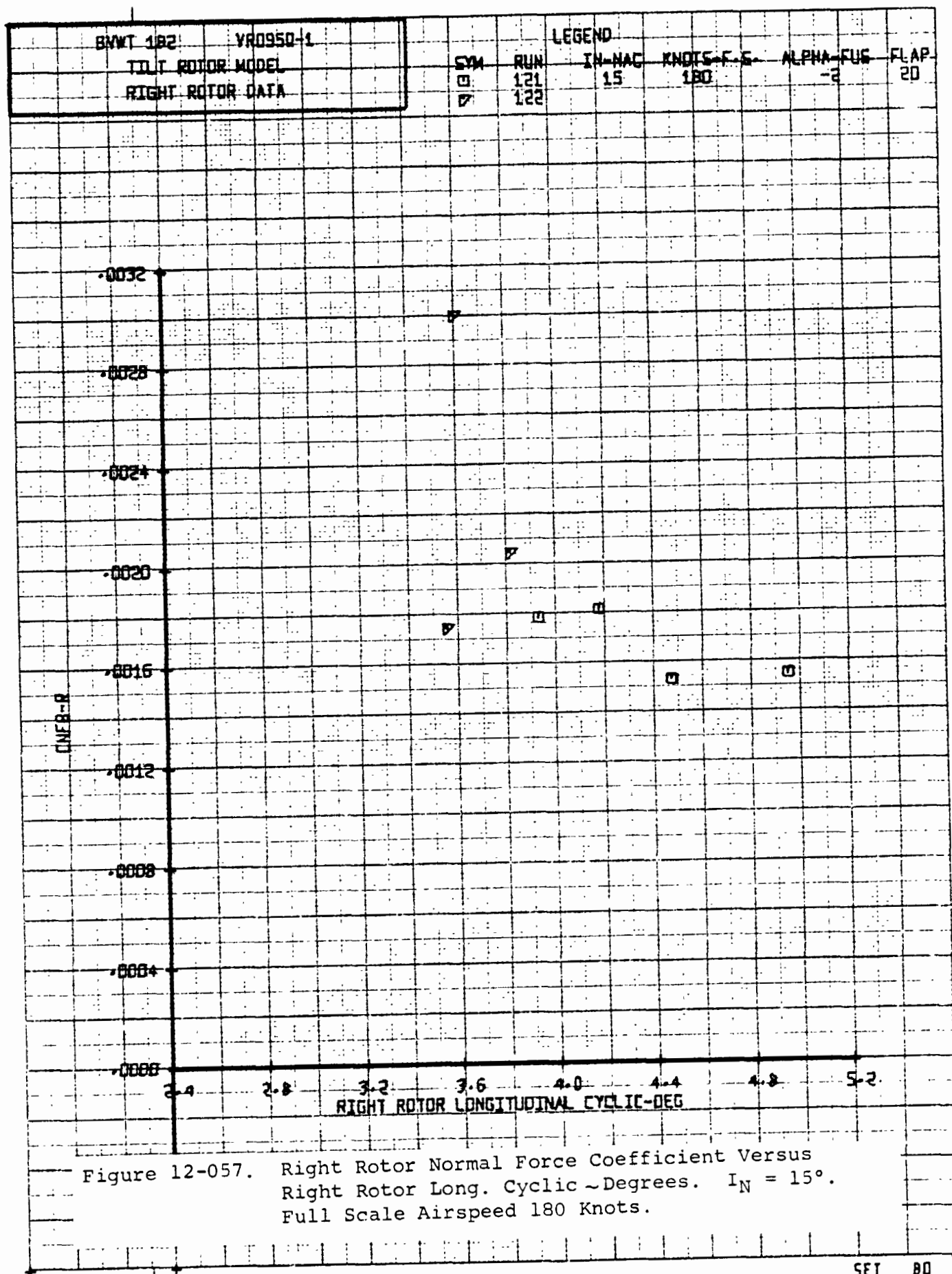


Figure 12-056. Right Rotor Power Coefficient Versus Right Rotor Long. Cyclic ~Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.



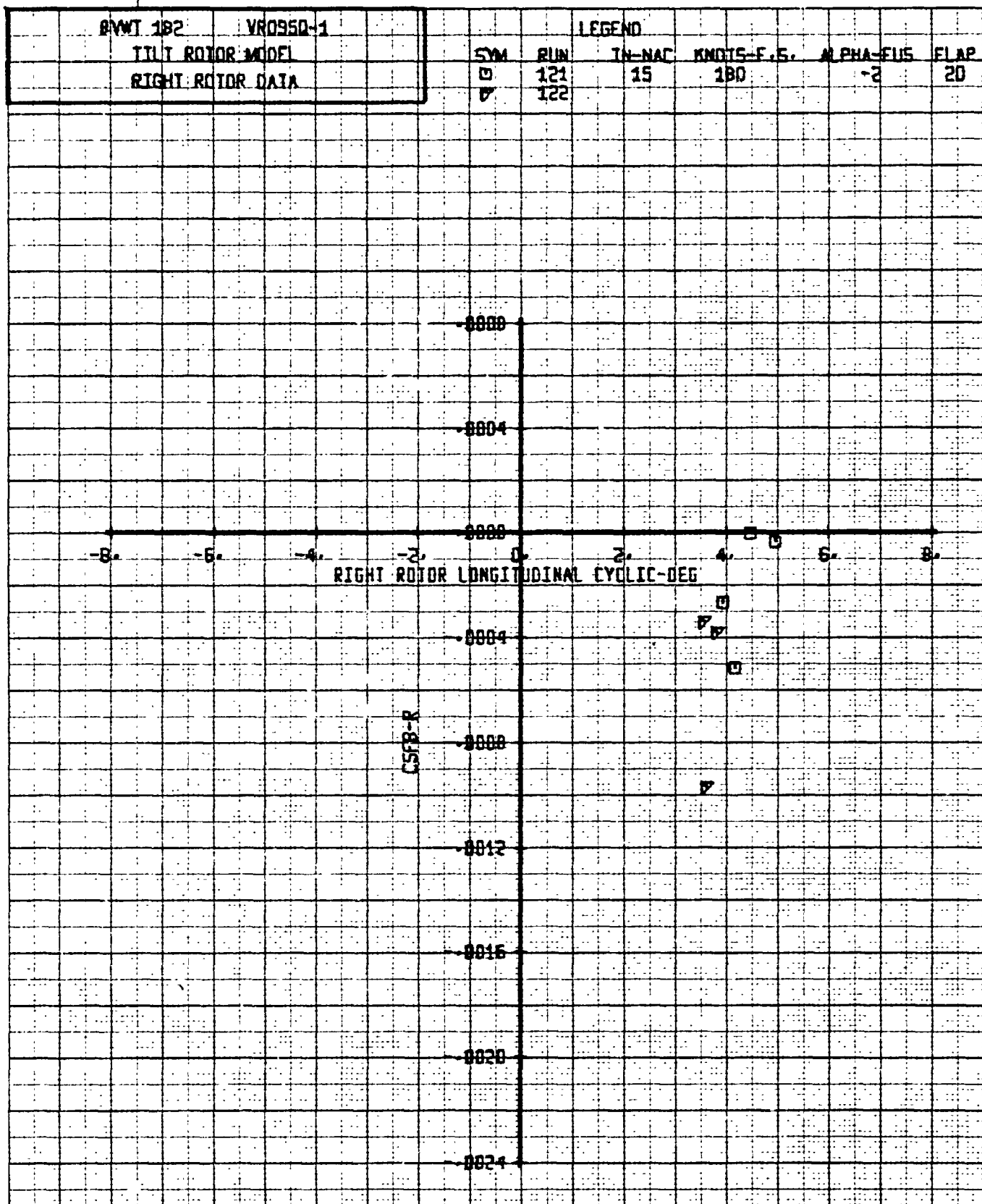
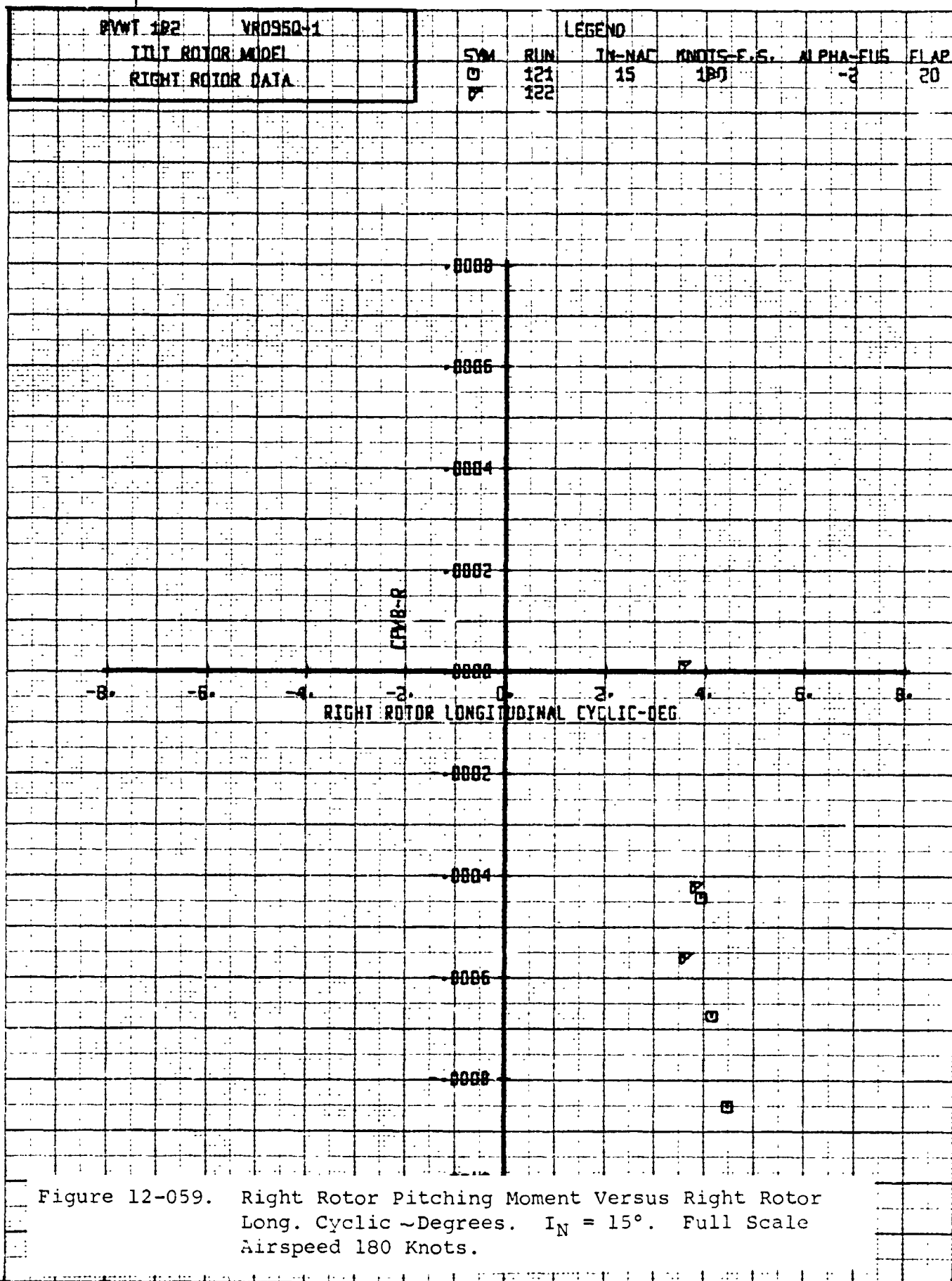
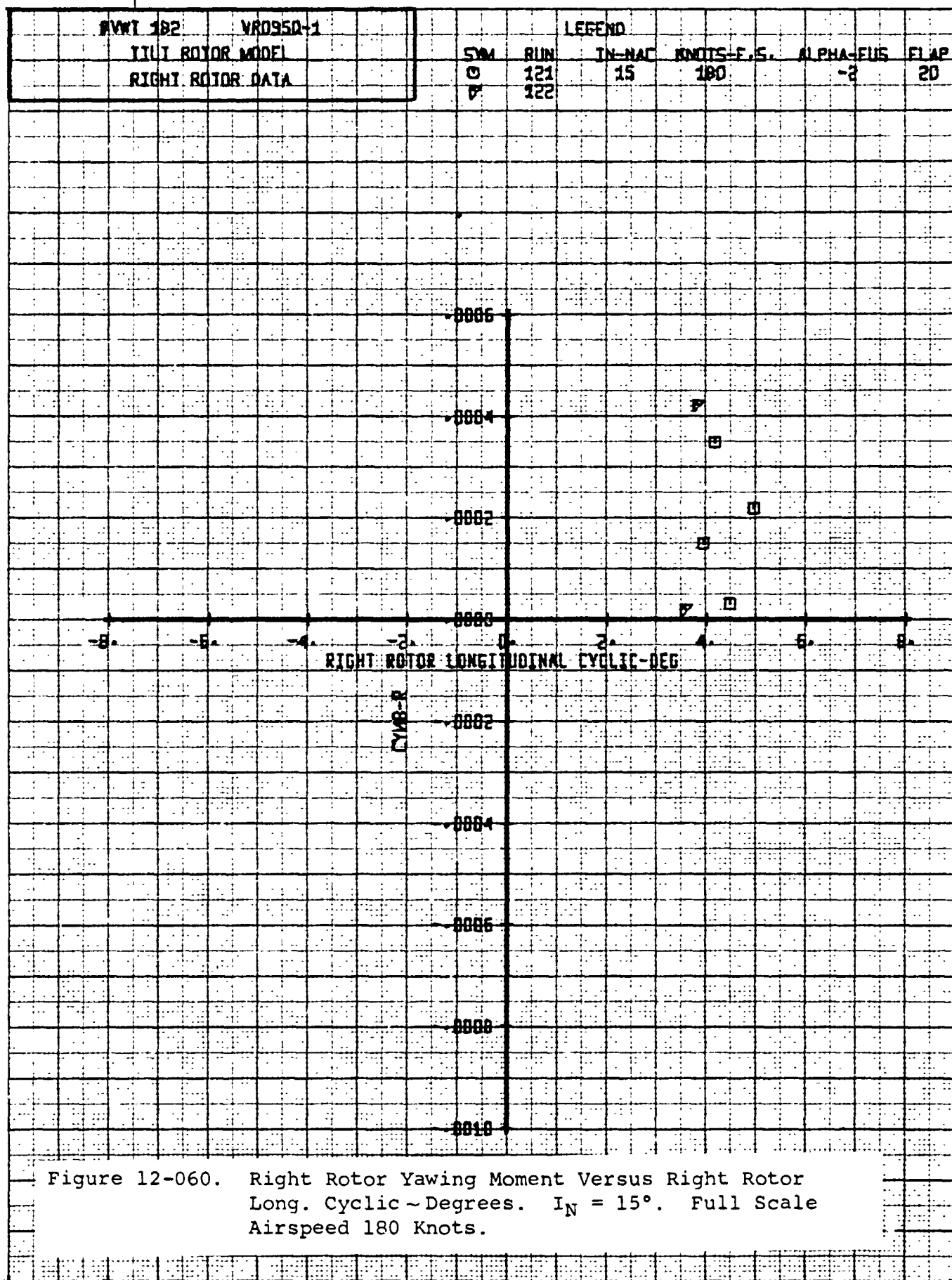
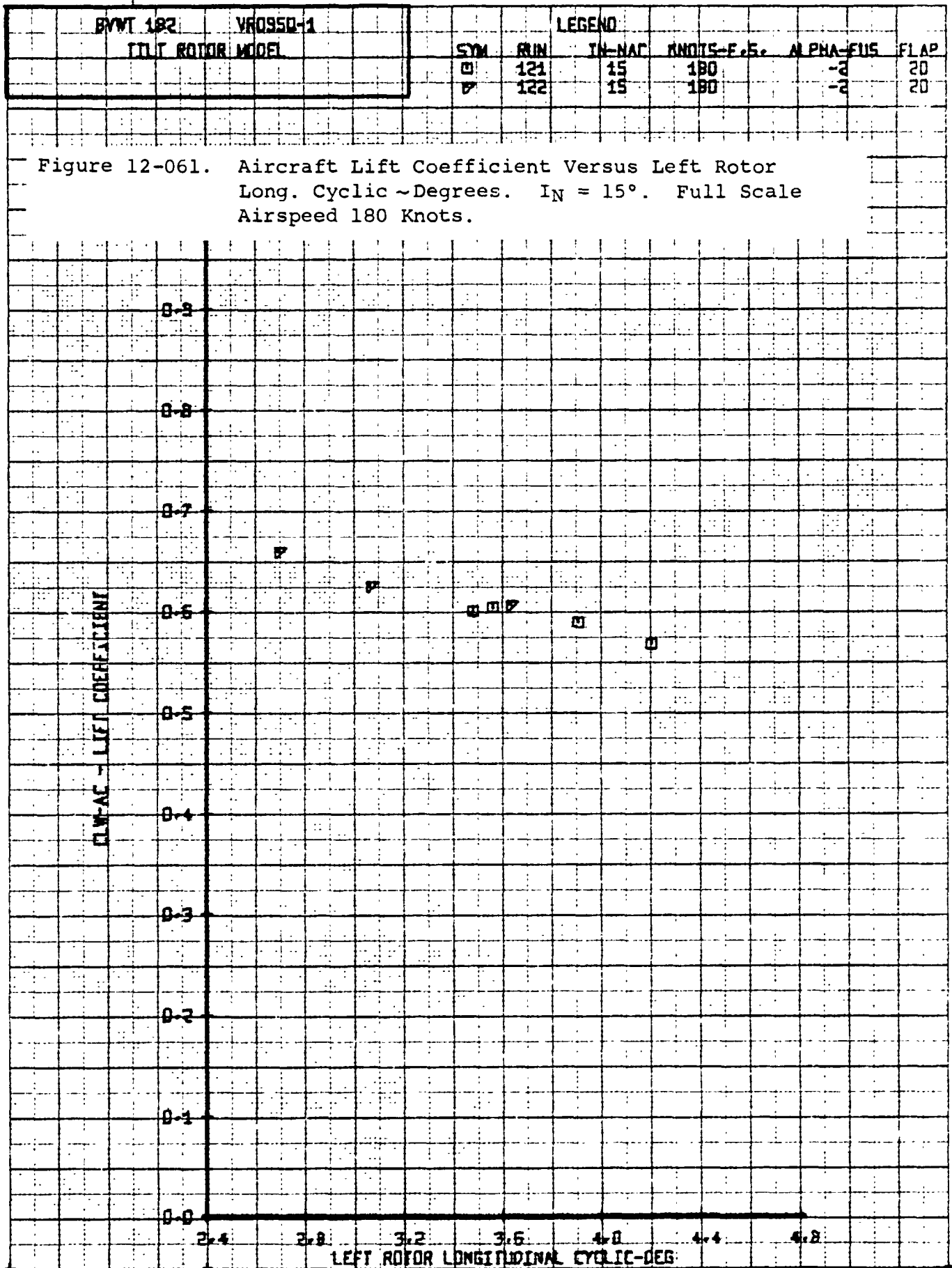
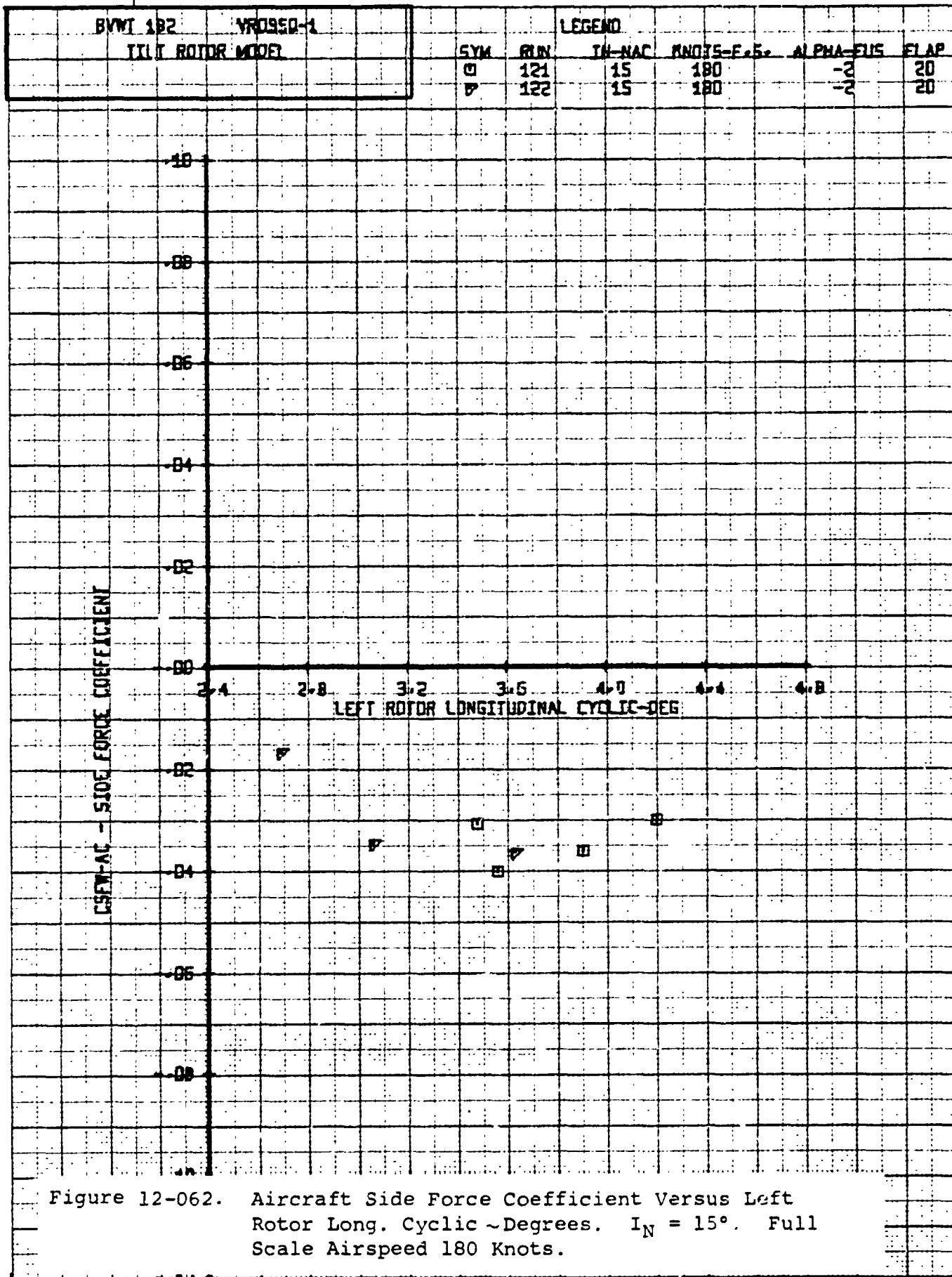


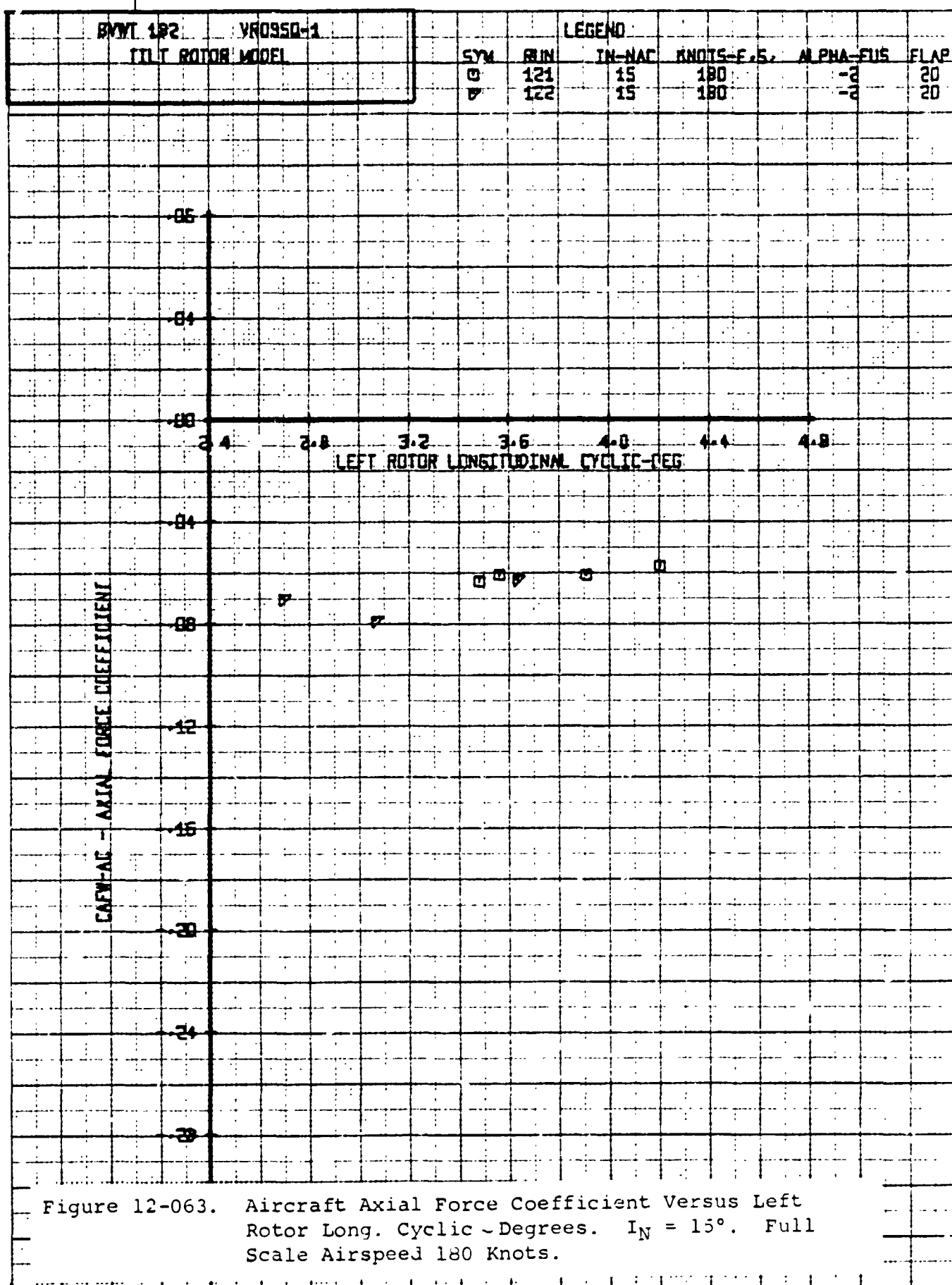
Figure 12-058. Right Rotor Side Force Coefficient Versus Right Rotor Long. Cyclic ~ Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.











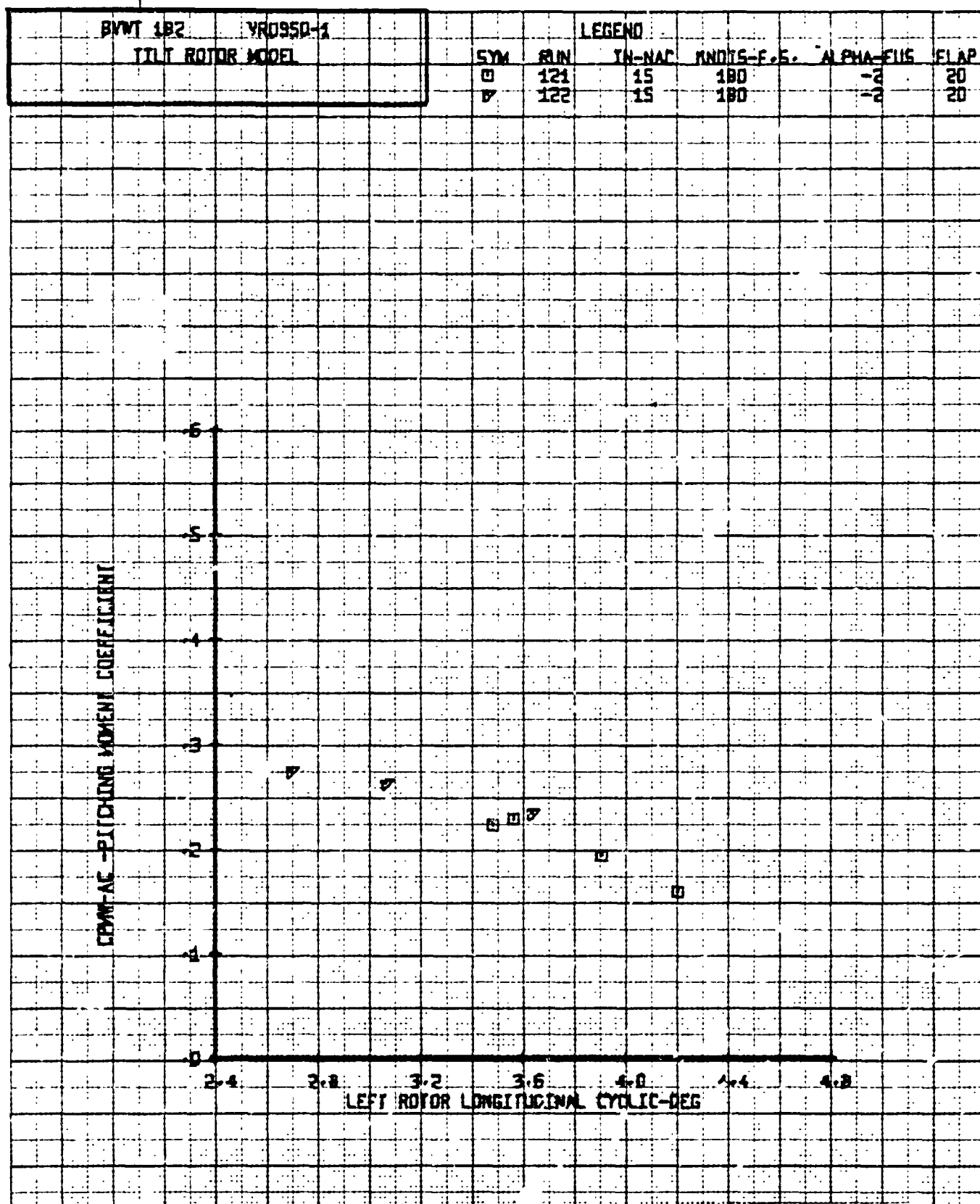


Figure 12-064. Aircraft Pitching Moment Coefficient Versus Left Rotor Long. Cyclic ~Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

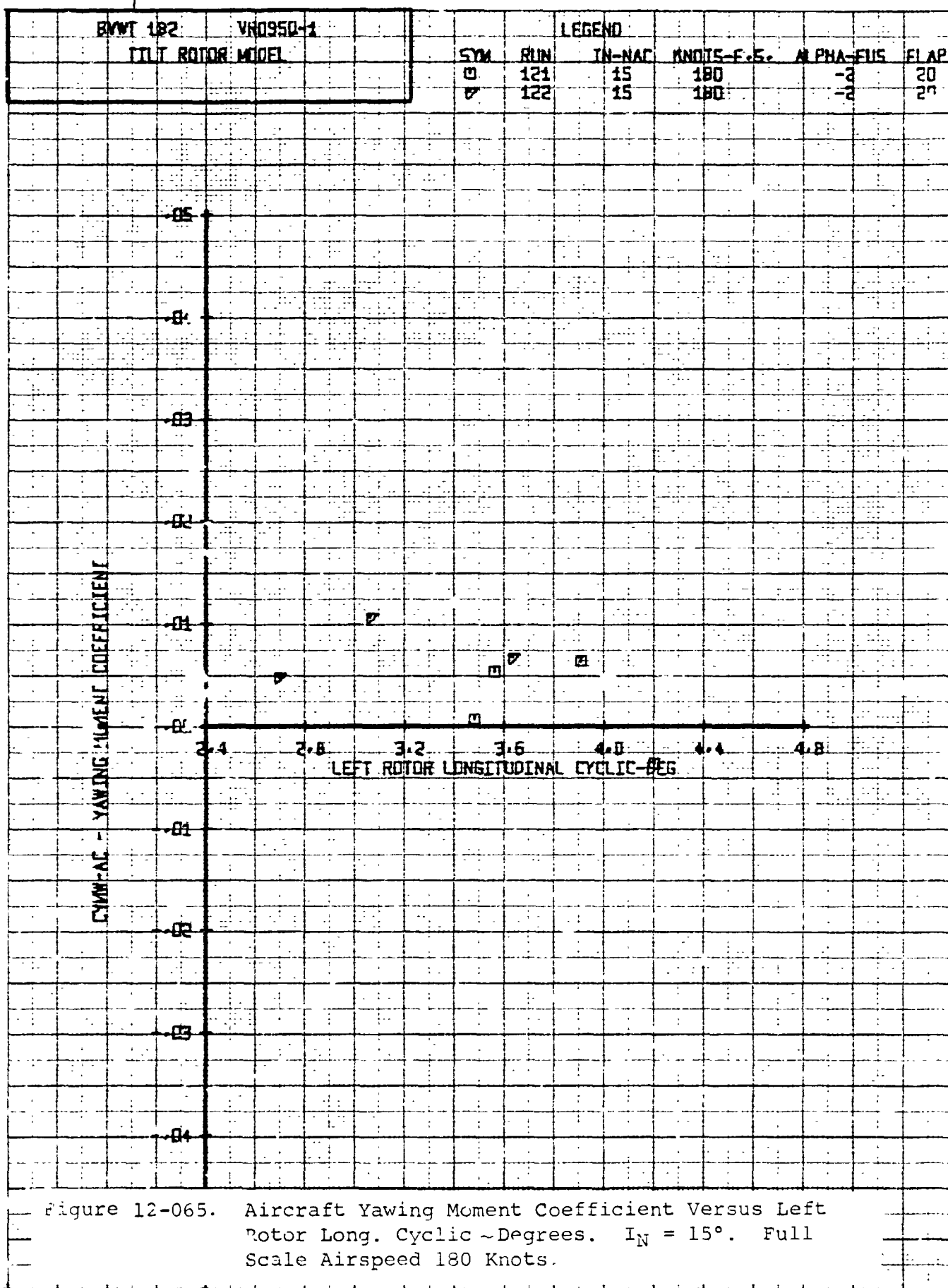


Figure 12-065. Aircraft Yawing Moment Coefficient Versus Left Rotor Long. Cyclic - Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

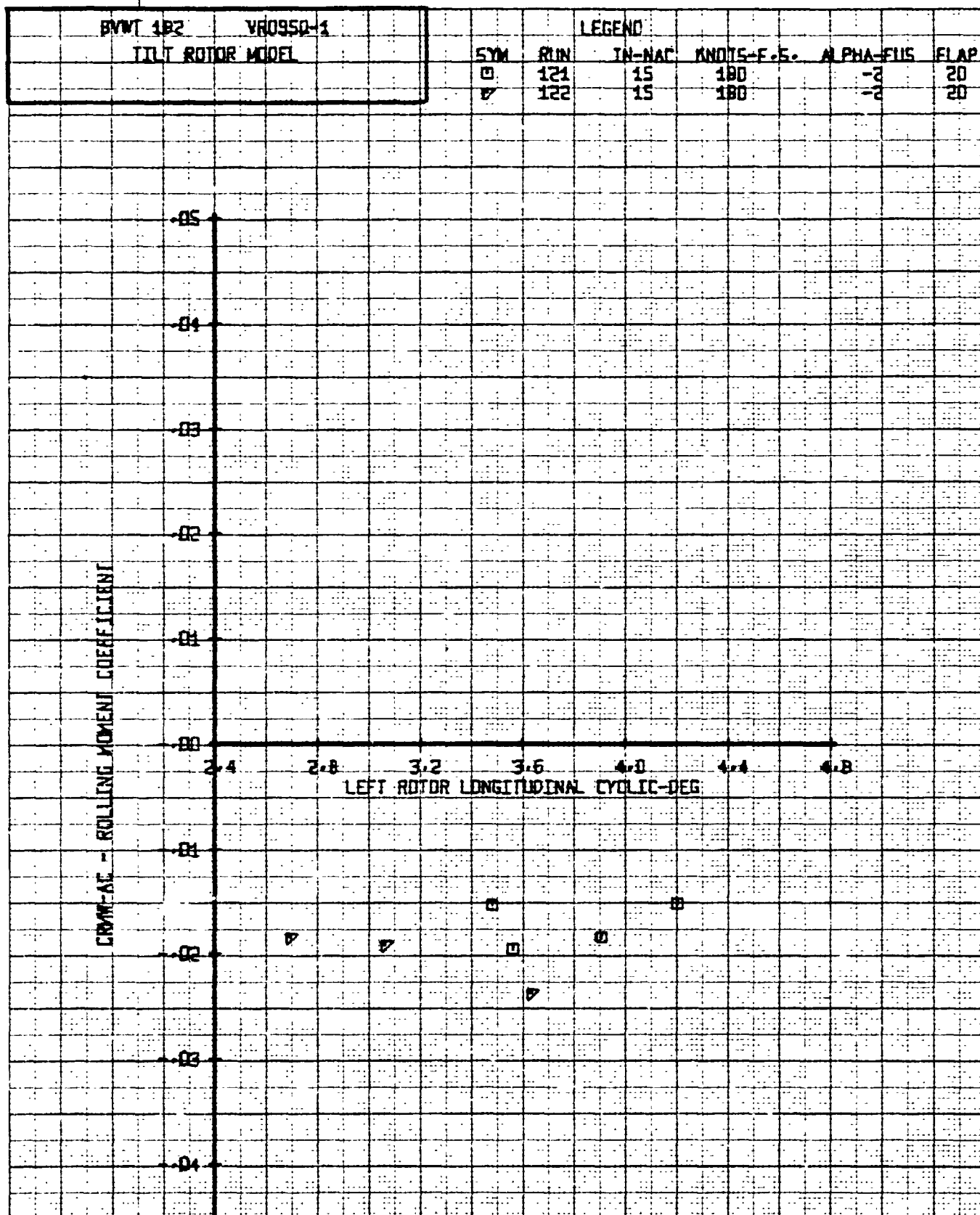
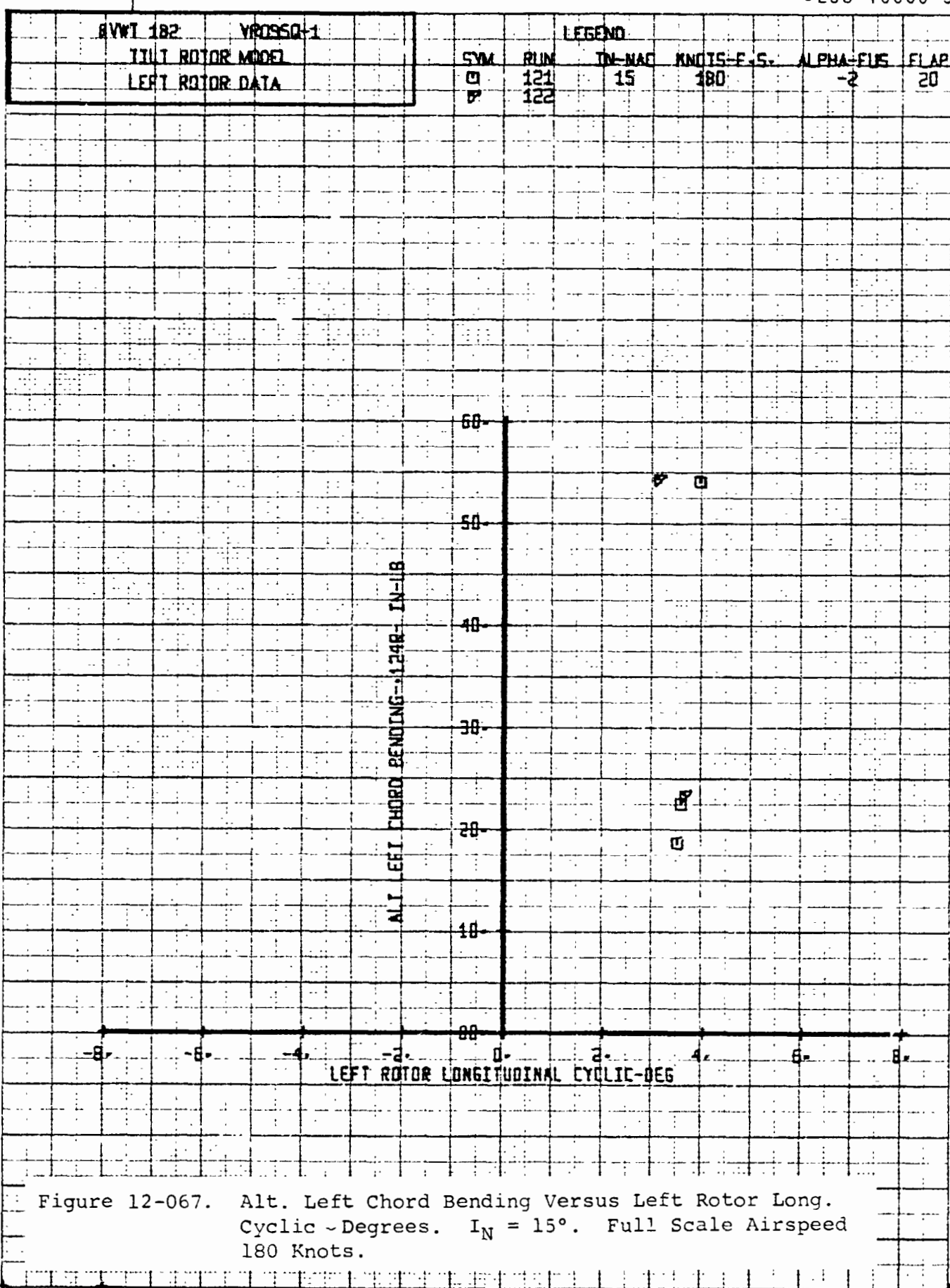
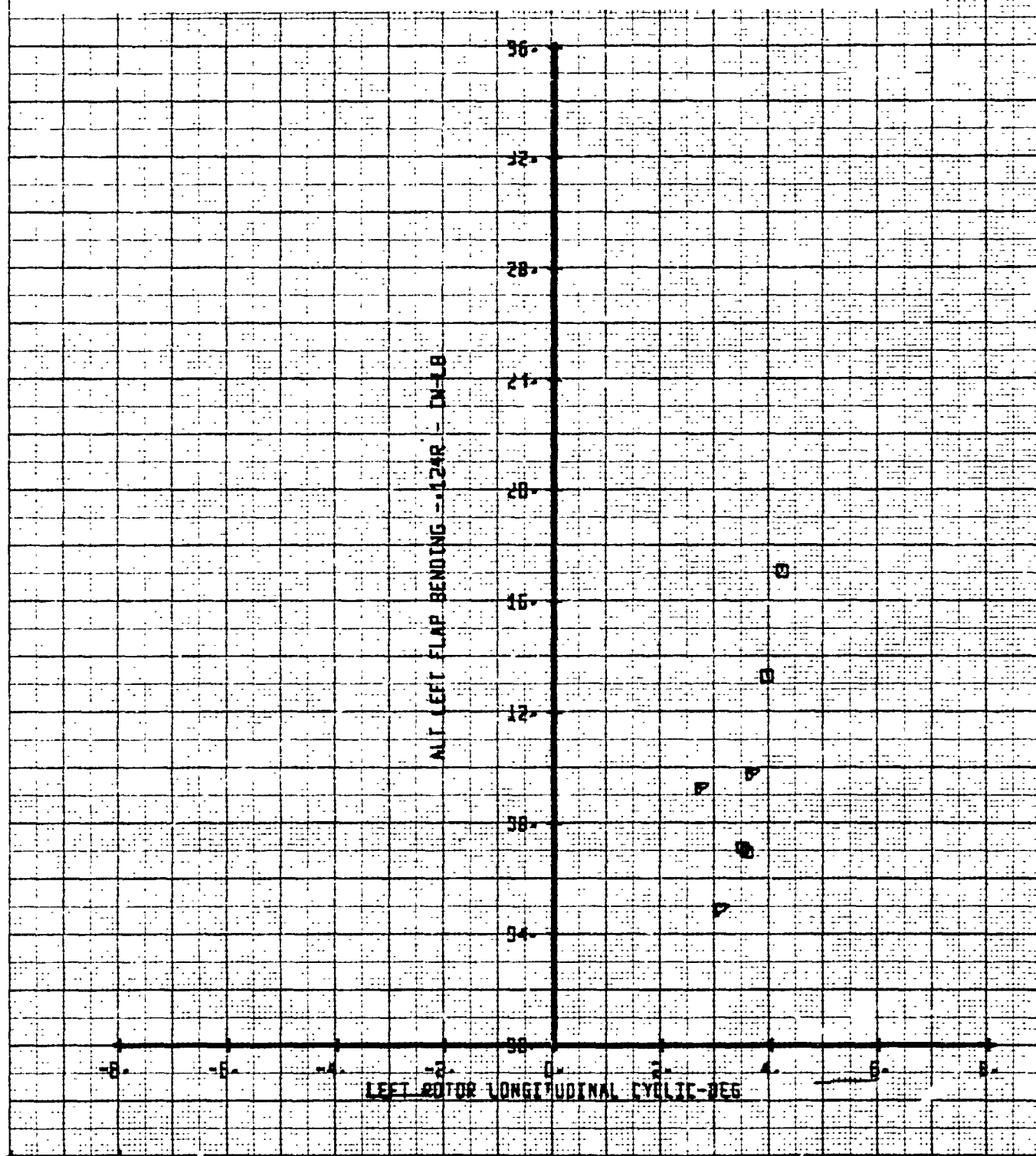


Figure 12-066. Aircraft Rolling Moment Coefficient Versus
Left Rotor Long. Cyclic ~Degrees. $I_N = 15^\circ$.
Full Scale Airspeed 180 Knots.



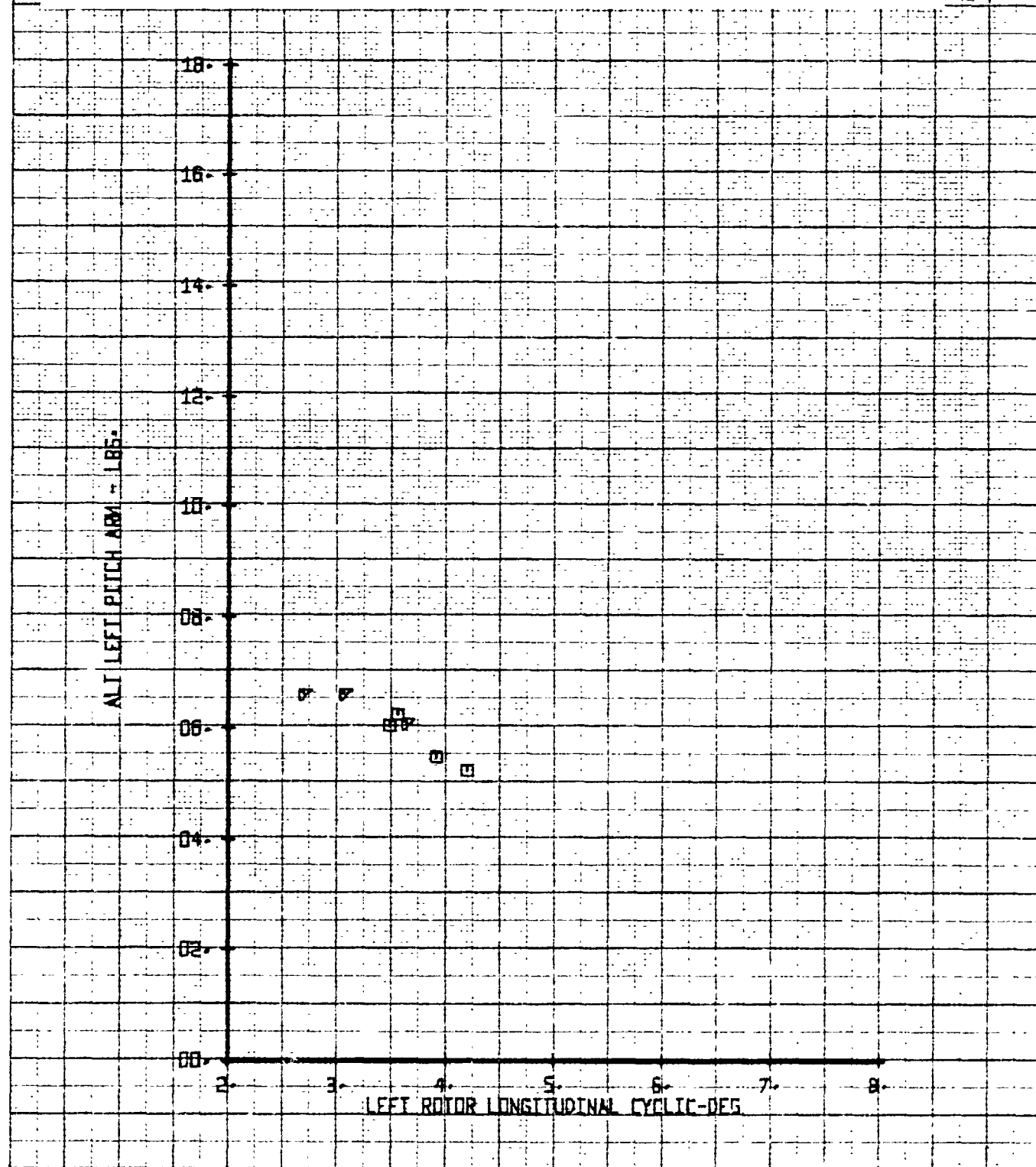
| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | VR0950-1 | LEGEND | | | | |
| TILT ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FUS |
| LEFT ROTOR DATA | | □ | 121 | 15 | 180 | -2 |
| | | ▽ | 122 | | | 20 |

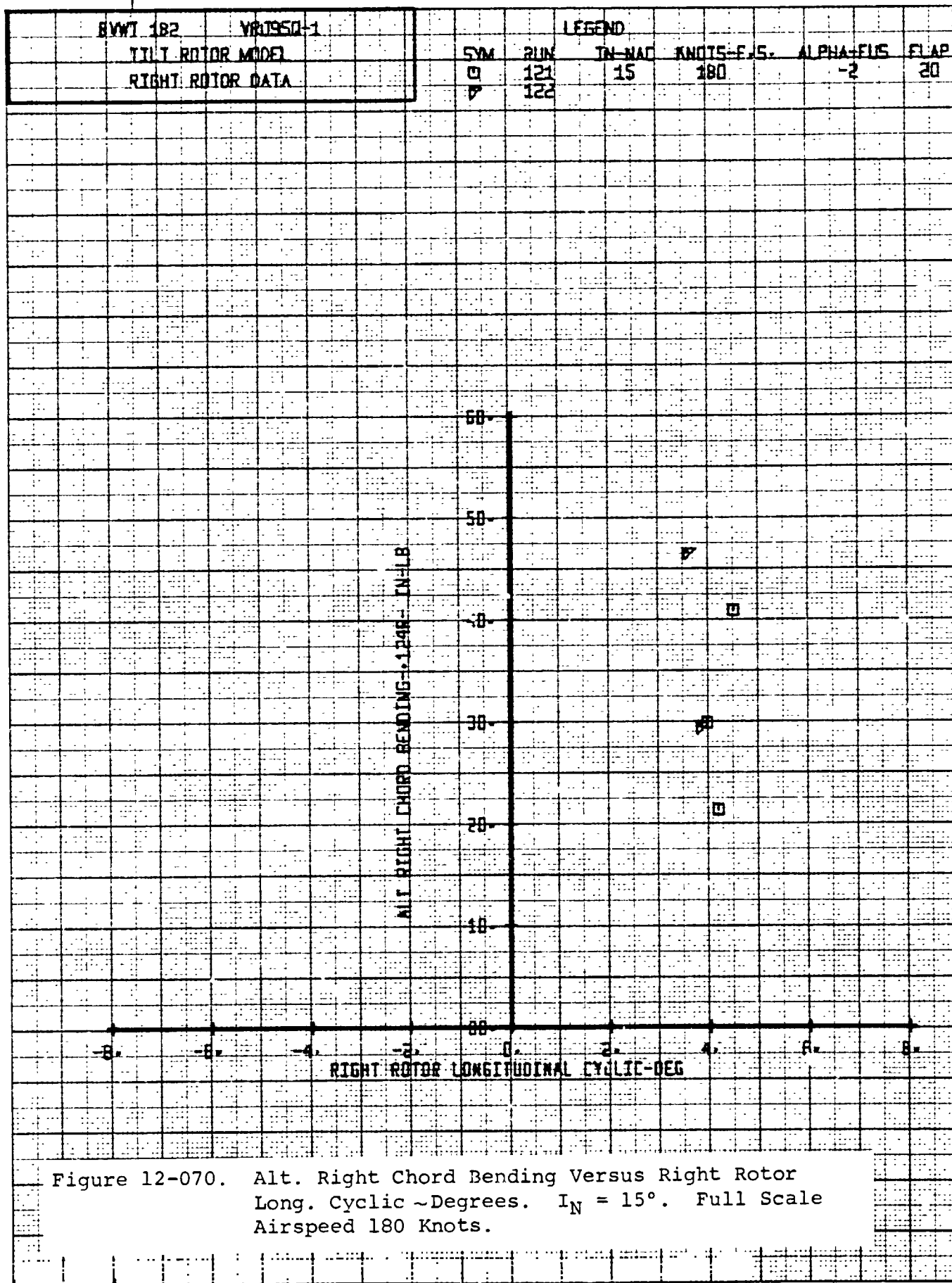
Figure 12-068. Alt. Left Flap Bending Versus Left Rotor Long.
Cyclic ~Degrees. $I_N = 15^\circ$. Full Scale Airspeed
180 Knots.



| | | | | | | | | | | |
|------------------|--|----------|--|--------|-----|--------|-------|-----|-----------|------|
| BWT 182 | | VR0950-1 | | LEGEND | | | | | | |
| ITLT ROTOR MODEL | | | | SYM | RUN | IN-NAC | KNOTS | F-S | ALPHA-FUS | FLAP |
| LEFT ROTOR DATA | | | | 0 | 121 | 15 | 180 | -3 | | 20 |
| | | | | 4 | 122 | 15 | 180 | -3 | | 20 |

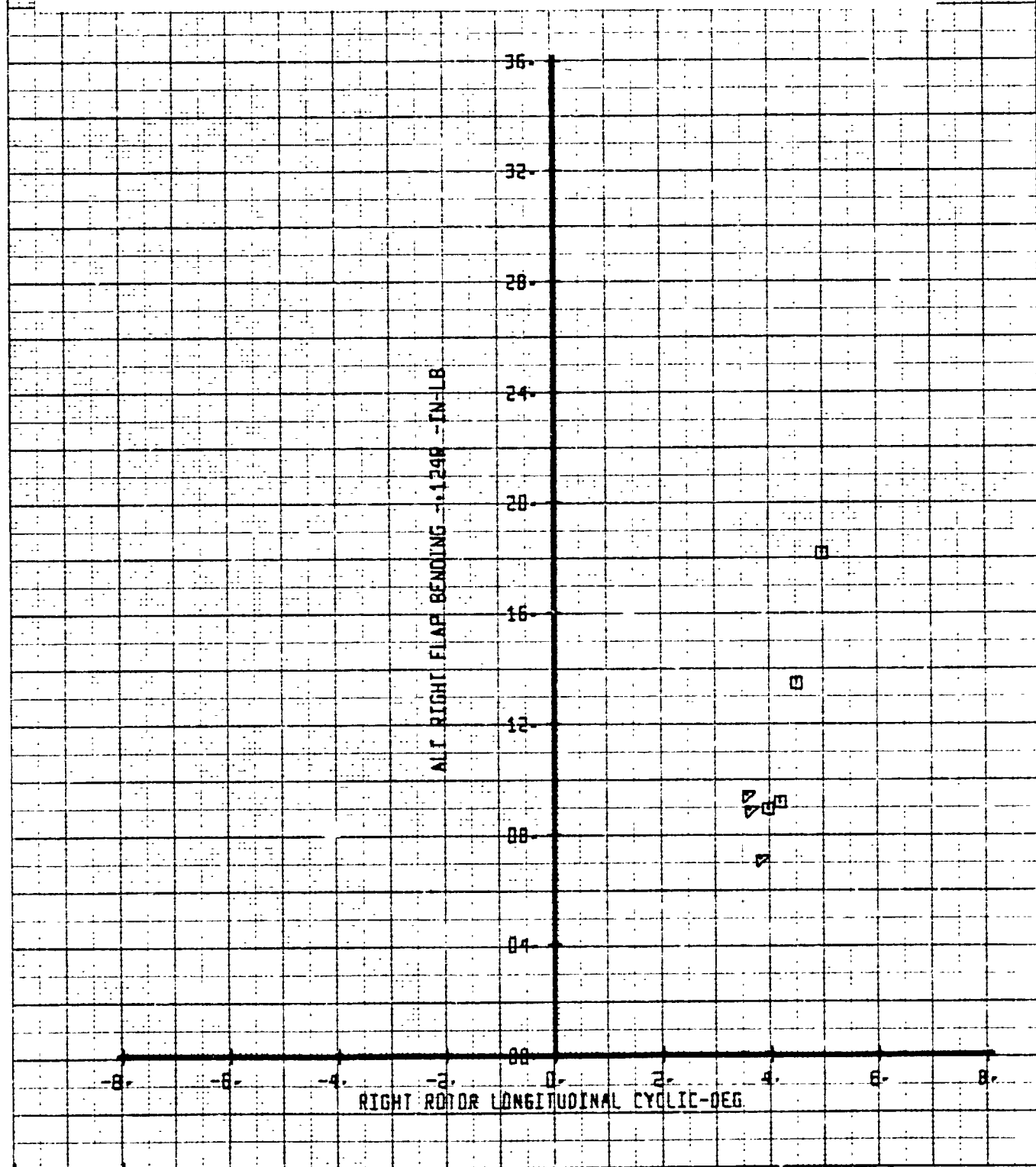
Figure 12-069. Alt. Left Pitch Link Load Versus Left Rotor Long. Cyclic ~Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.





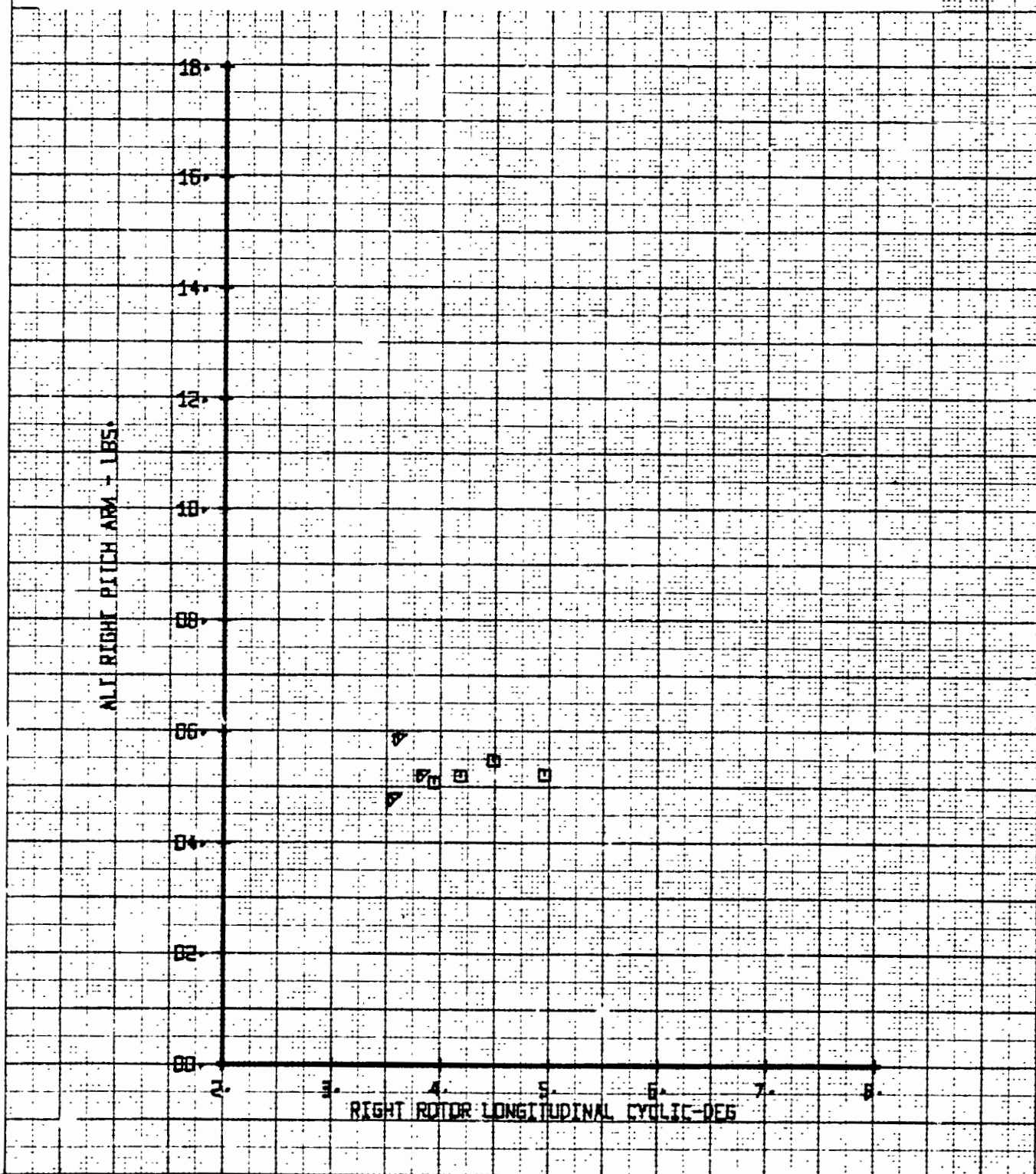
| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | VR0550-1 | LEGEND | | | | |
| TILT ROTOR MODEL | | SYM | RUN | IN-MAC | KNOTS-E-S. | ALPHA-EUS |
| RIGHT ROTOR DATA | | □ | 121 | 15 | 180 | -2 |
| | | ▽ | 122 | | | 20 |

Figure 12-071. Alt. Right Flap Bending Versus Right Rotor Long. Cyclic ~Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.



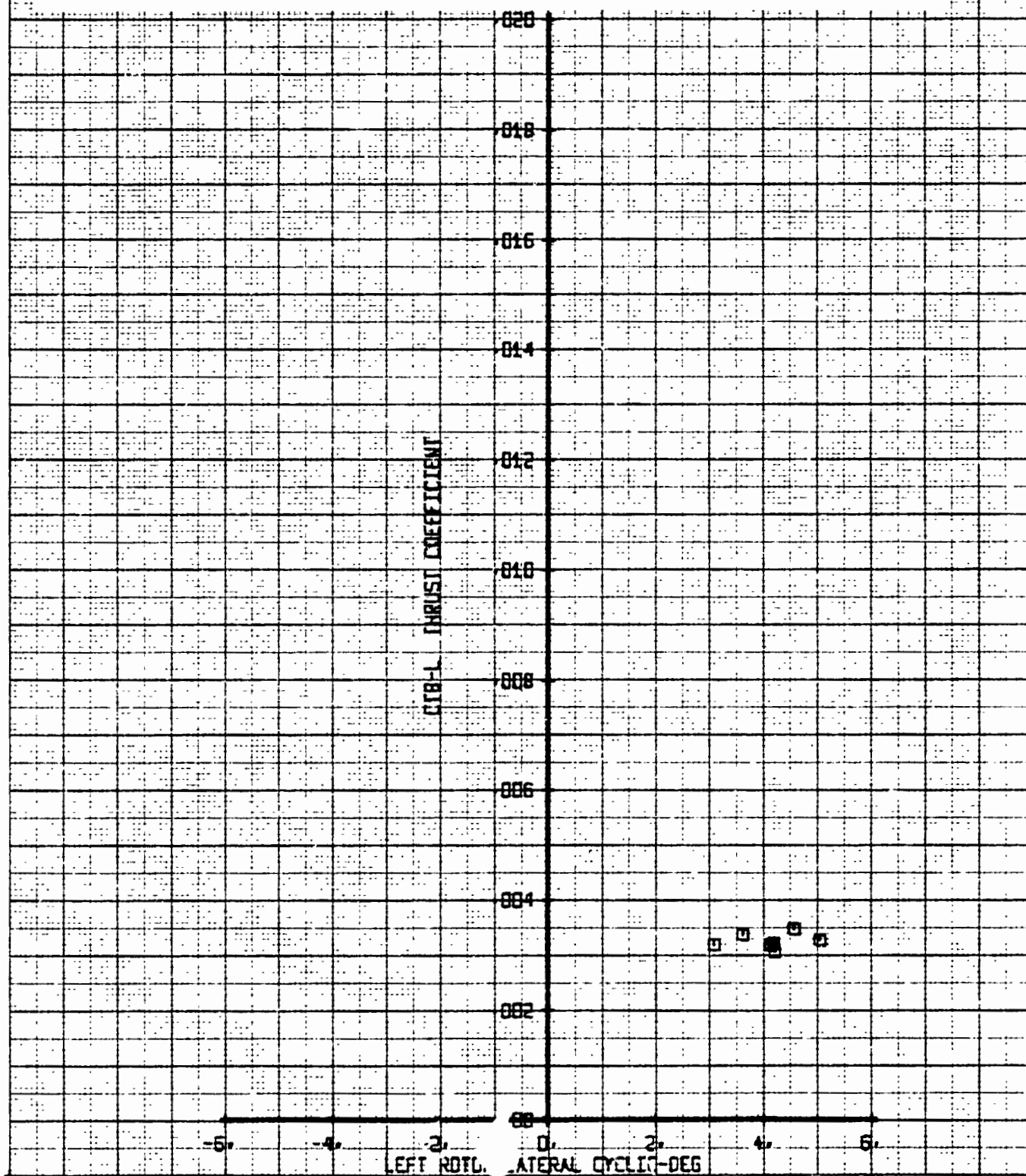
| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | VR0950-1 | LEGEND | | | | |
| TILT ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FUS |
| RIGHT ROTOR DATA | | □ | 121 | 15 | 180 | -2 |
| | | ▽ | 122 | 15 | 180 | -2 |
| | | | | | | FLAP |
| | | | | | | 20 |
| | | | | | | 20 |

Figure 12-072. Alt. Right Pitch Link Load Versus Right Rotor Long. Cyclic ~Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.



| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | VR0950-1 | LEGEND | | | | |
| TILT ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FUS |
| LEFT ROTOR DATA | | 0 | 120 | 15 | 180 | -2 |
| | | | | | | 20 |

Figure 12-073. Left Rotor Thrust Coefficient Versus Left Rotor Lat. Cyclic ~Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.



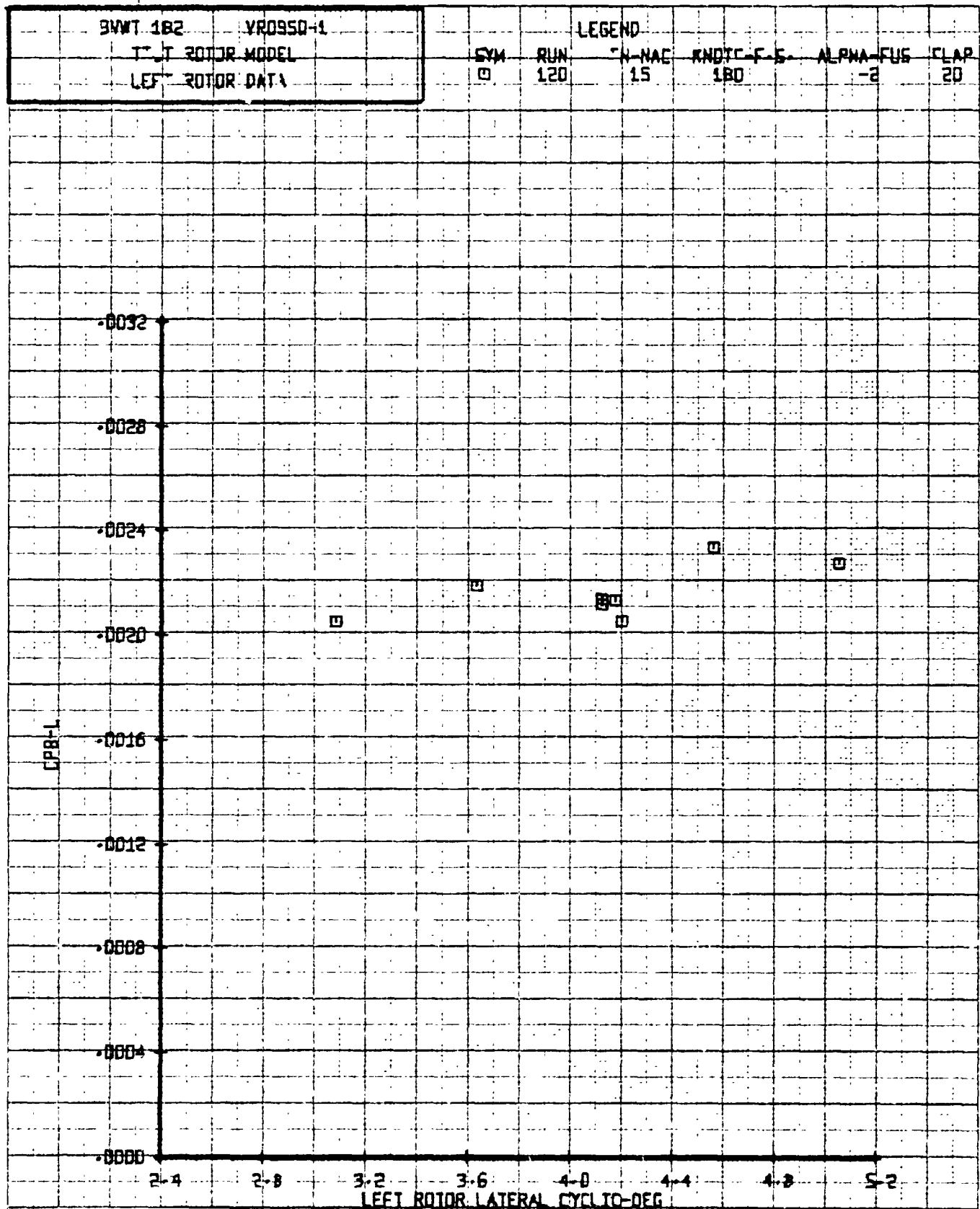


Figure 12-074. Left Rotor Power Coefficient Versus Left Rotor Lat. Cyclic ~Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

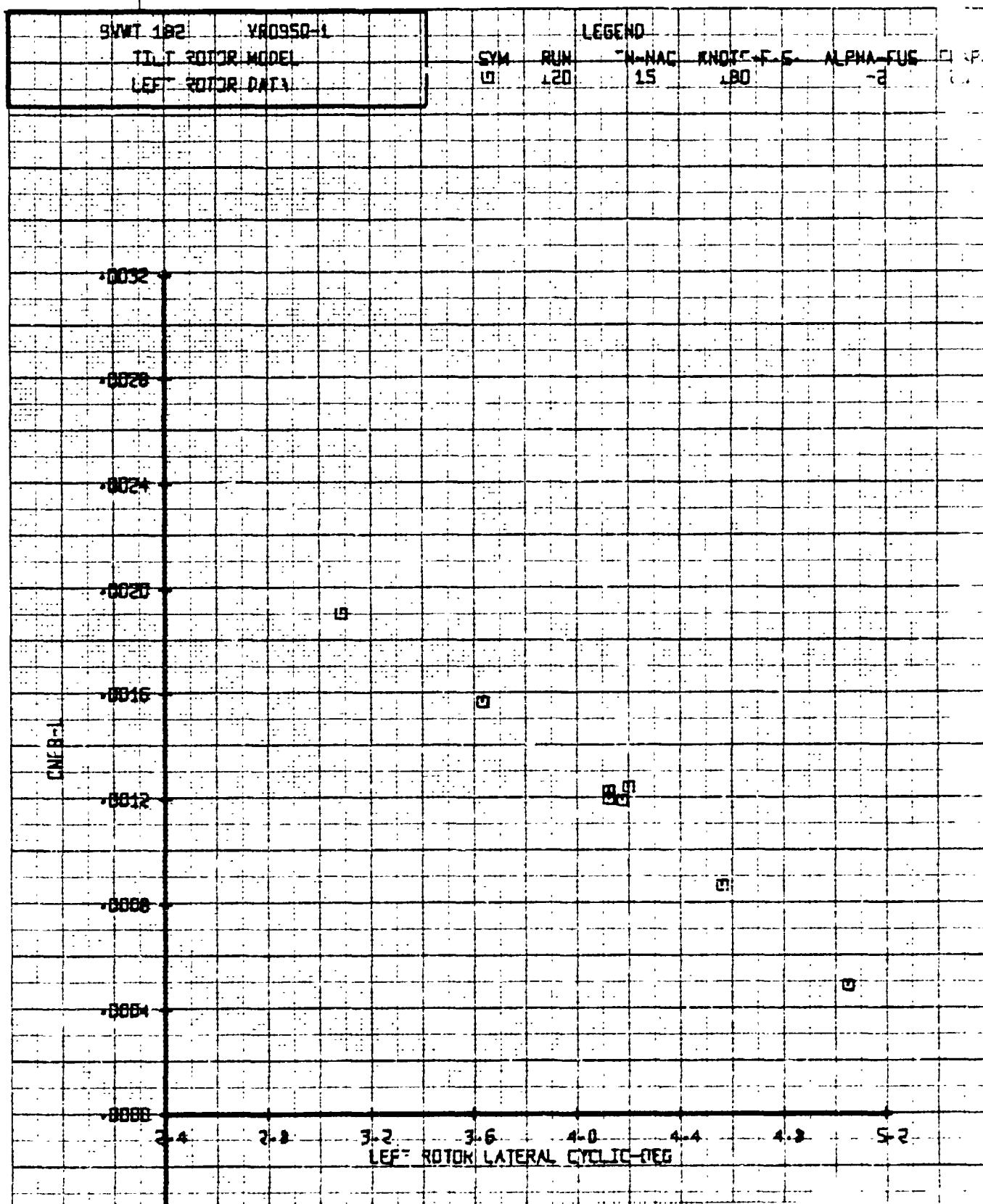


Figure 12-075. Left Rotor Normal Force Coefficient Versus Left Rotor Lat. Cyclic - Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

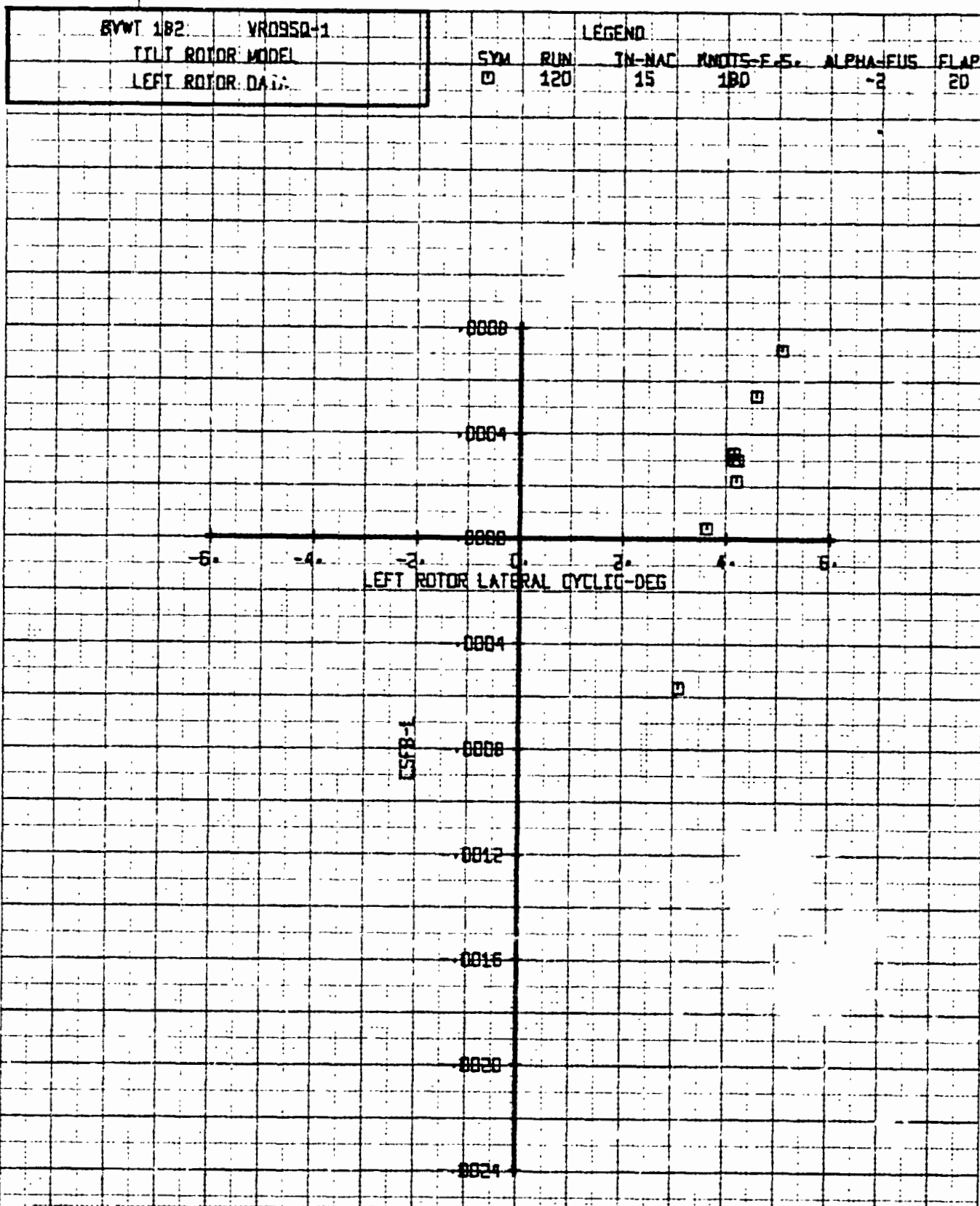
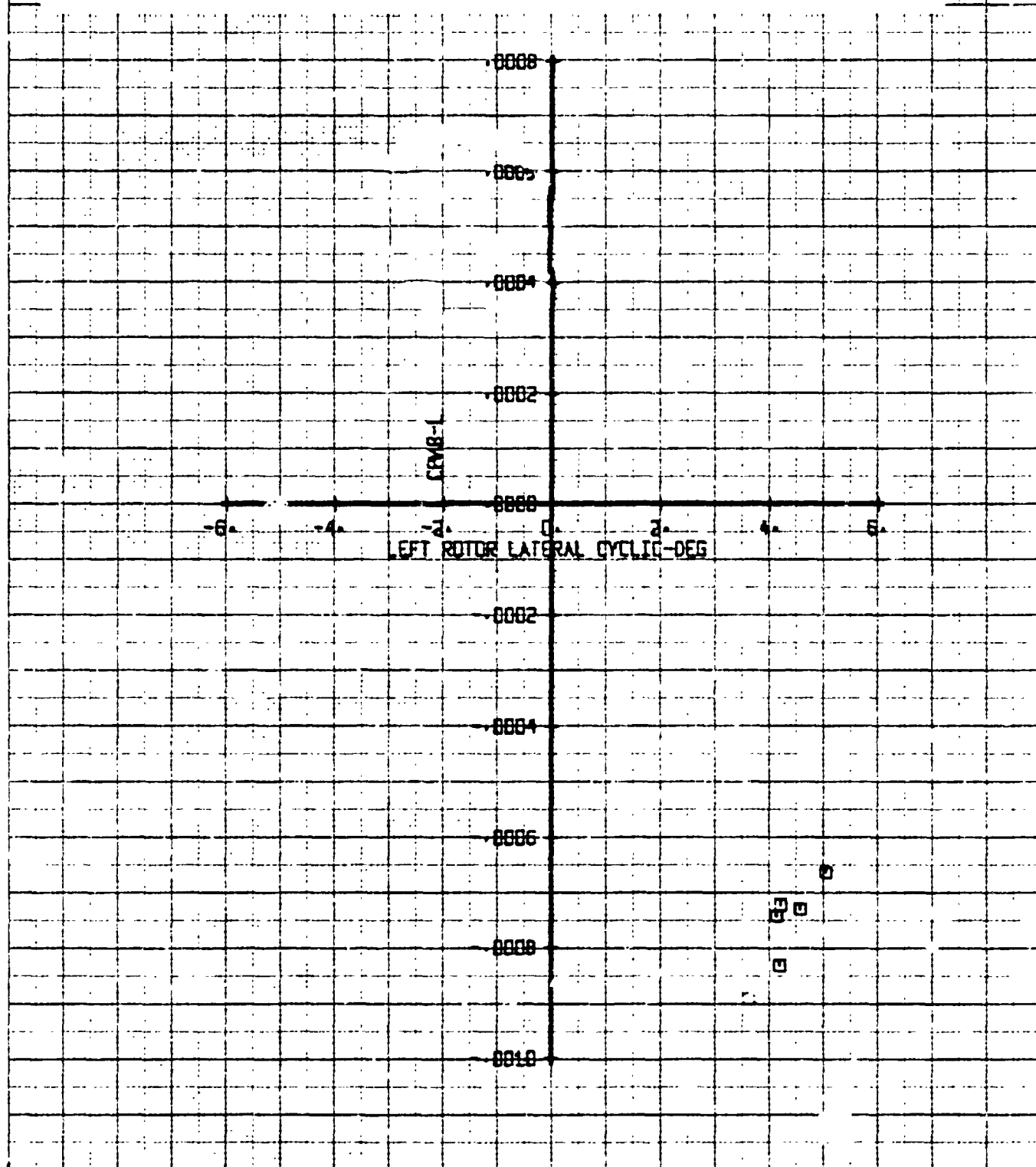


Figure 12-076. Left Rotor Side Force Coefficient Versus Left Rotor Lat. Cyclic ~Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| SVWT 182 | VR09SQ-1 | LEGEND | | | | |
| LEFT ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FUS |
| LEFT ROTOR DATA | | 0 | 120 | 15 | 180 | -2 |
| | | | | | | E AP 20 |

Figure 12-077. Left Rotor Pitching Moment Coefficient Versus
Left Rotor Lat. Cyclic ~Degrees. $I_N = 15^\circ$.
Full Scale Airspeed 180 Knots.



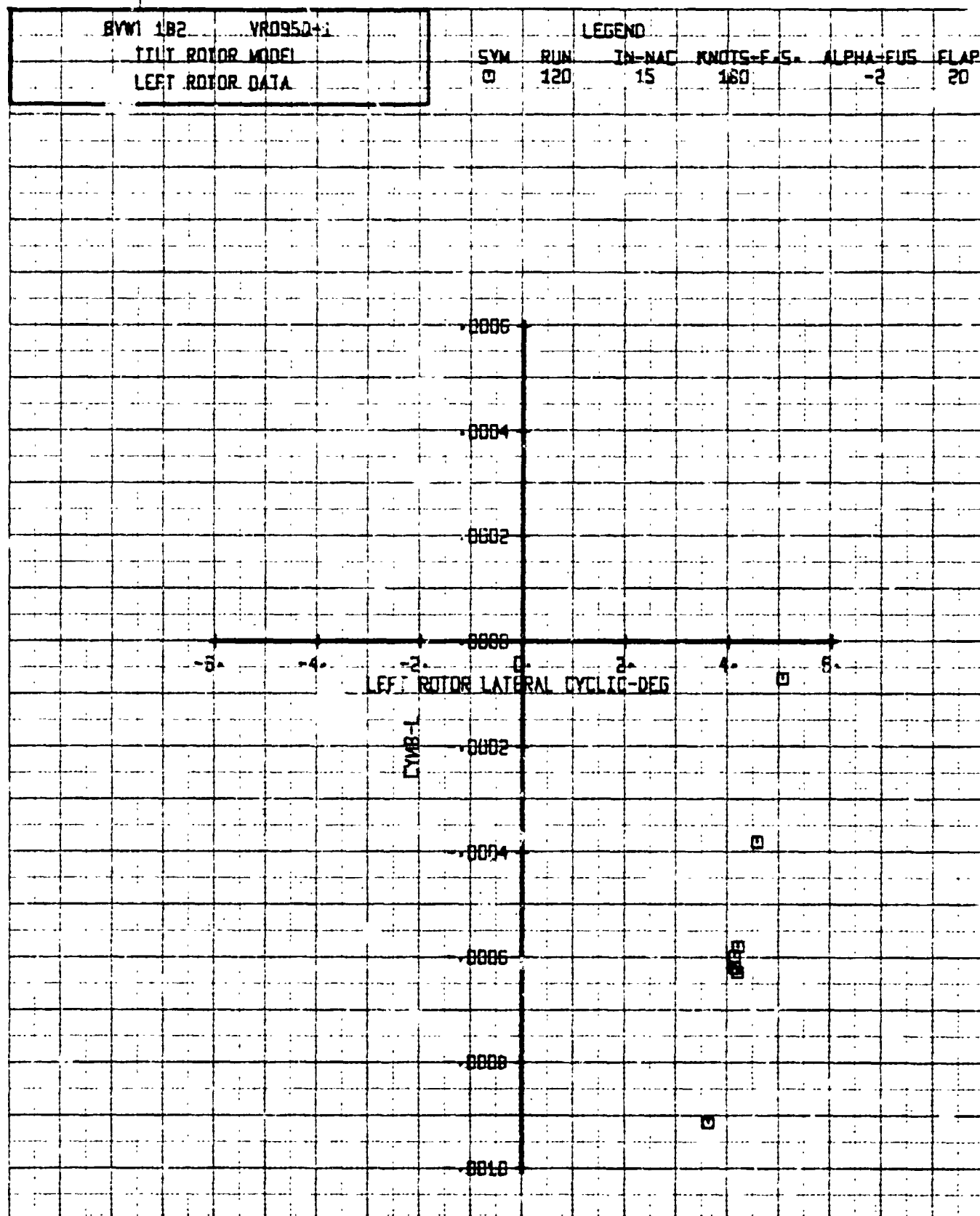
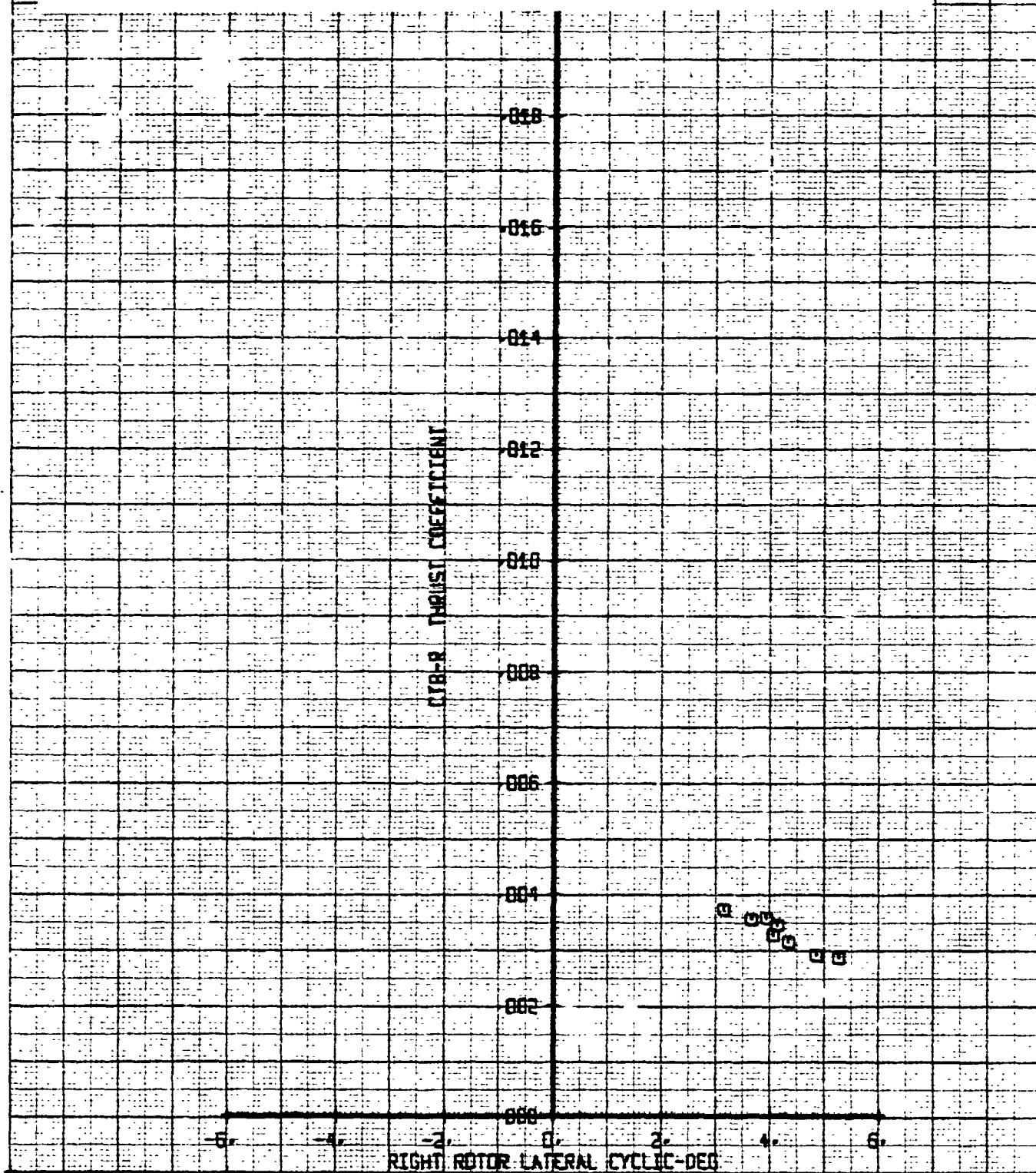


Figure 12-078. Left Rotor Yawing Moment Coefficient Versus
 Left Rotor Lat. Cyclic-Degrees. $I_{xx} = 15^\circ$
 Full Scale Airspeed 180 Knots.

| | | | | | | | |
|------------------|----------|--------|-----|--------|-----------|-----------|------|
| BVWT 182 | VR0950-1 | LEGEND | | | | | |
| TILT ROTOR MODEL | | SYM | NUM | IN-NAE | KNOTS-E-S | ALPHA-EUE | FLAP |
| RIGHT ROTOR DATA | | 0 | 120 | 15 | 180 | -2 | 20 |

Figure 12-079. Right Rotor Thrust Coefficient Versus Right Rotor Lat. Cyclic ~Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.



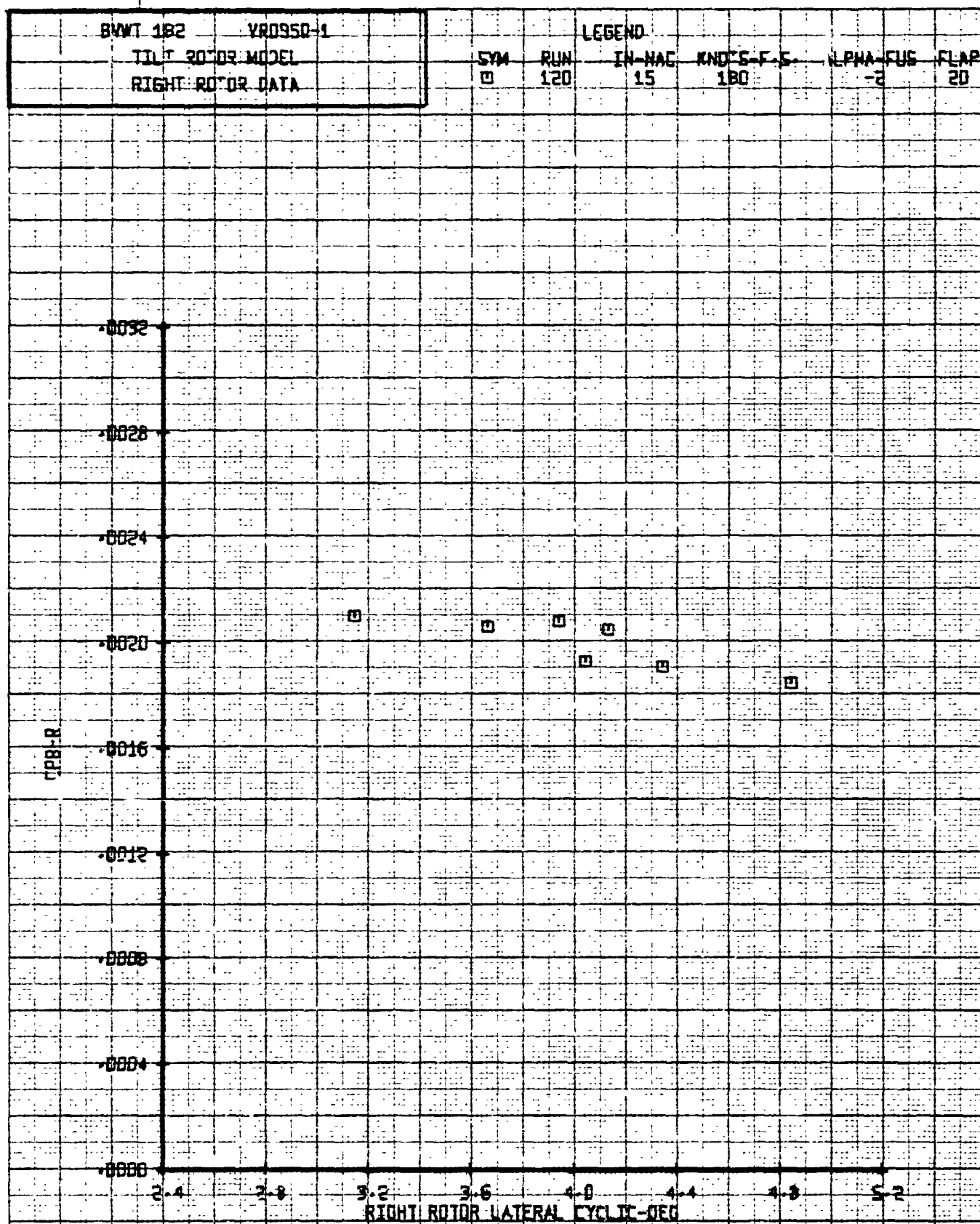


Figure 12-080. Right Rotor Power Coefficient Versus Right Rotor Lat Cyclic ~Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

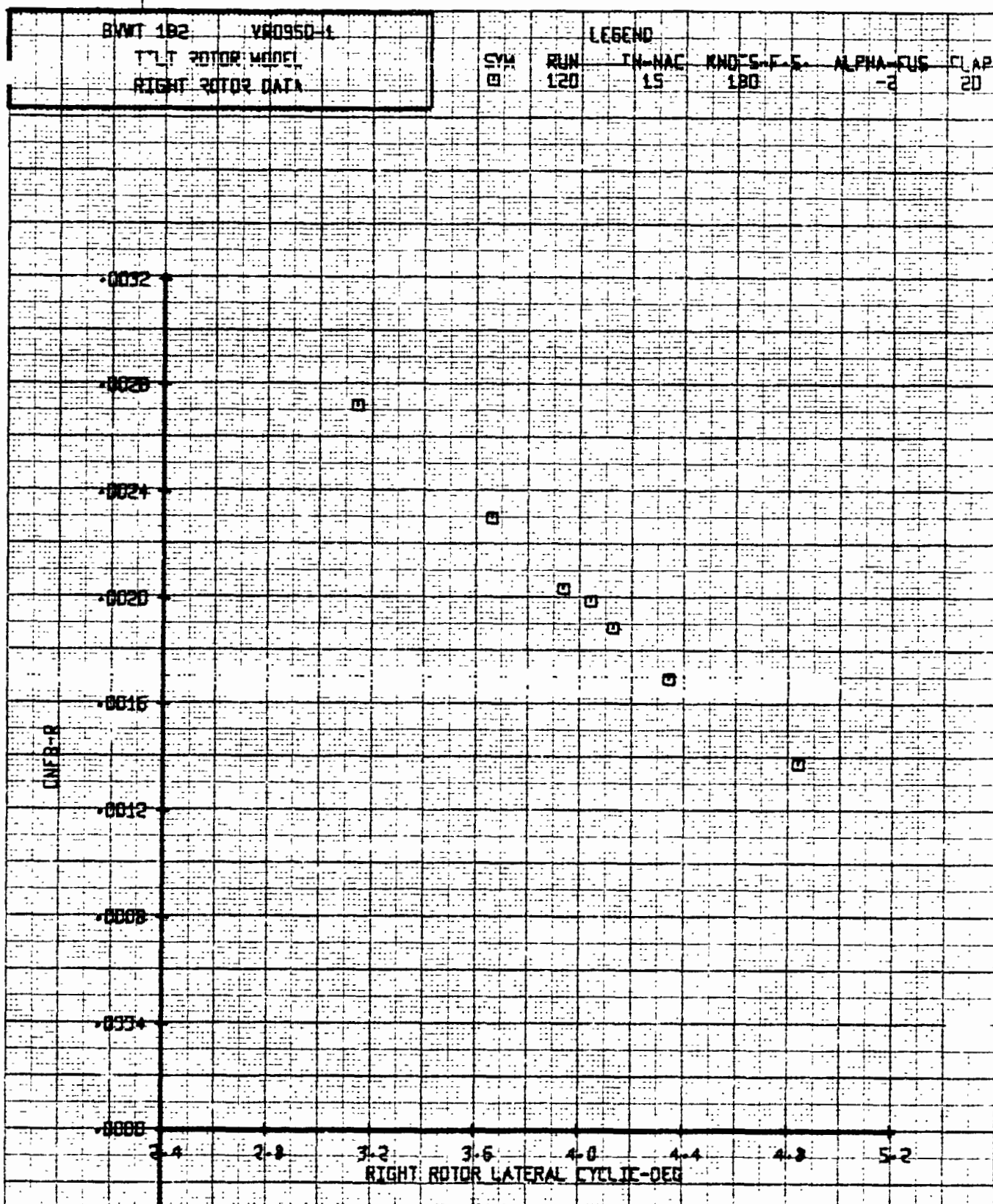


Figure 12-081. Right Rotor Normal Force Coefficient Versus Right Rotor Lat. Cyclic ~Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

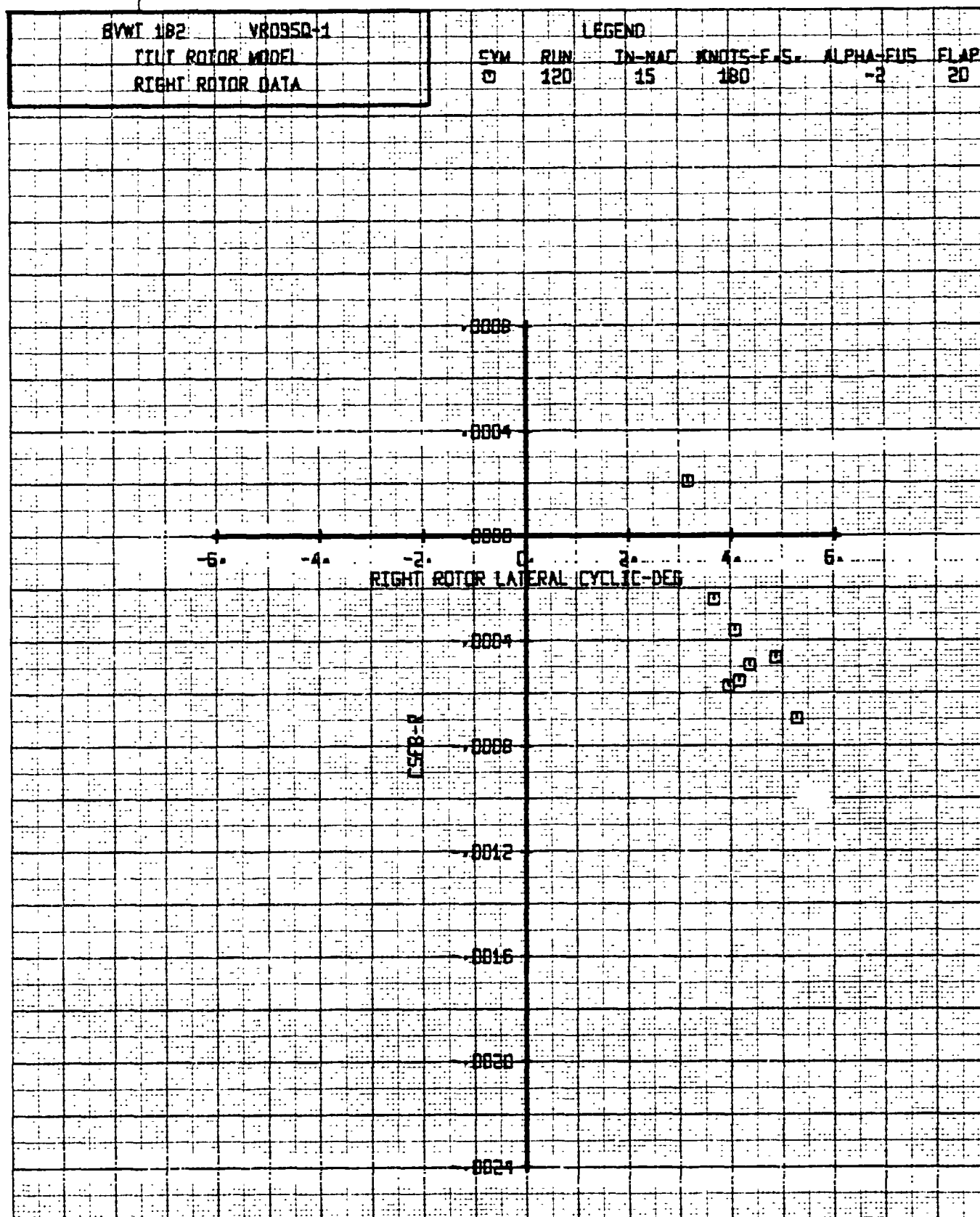
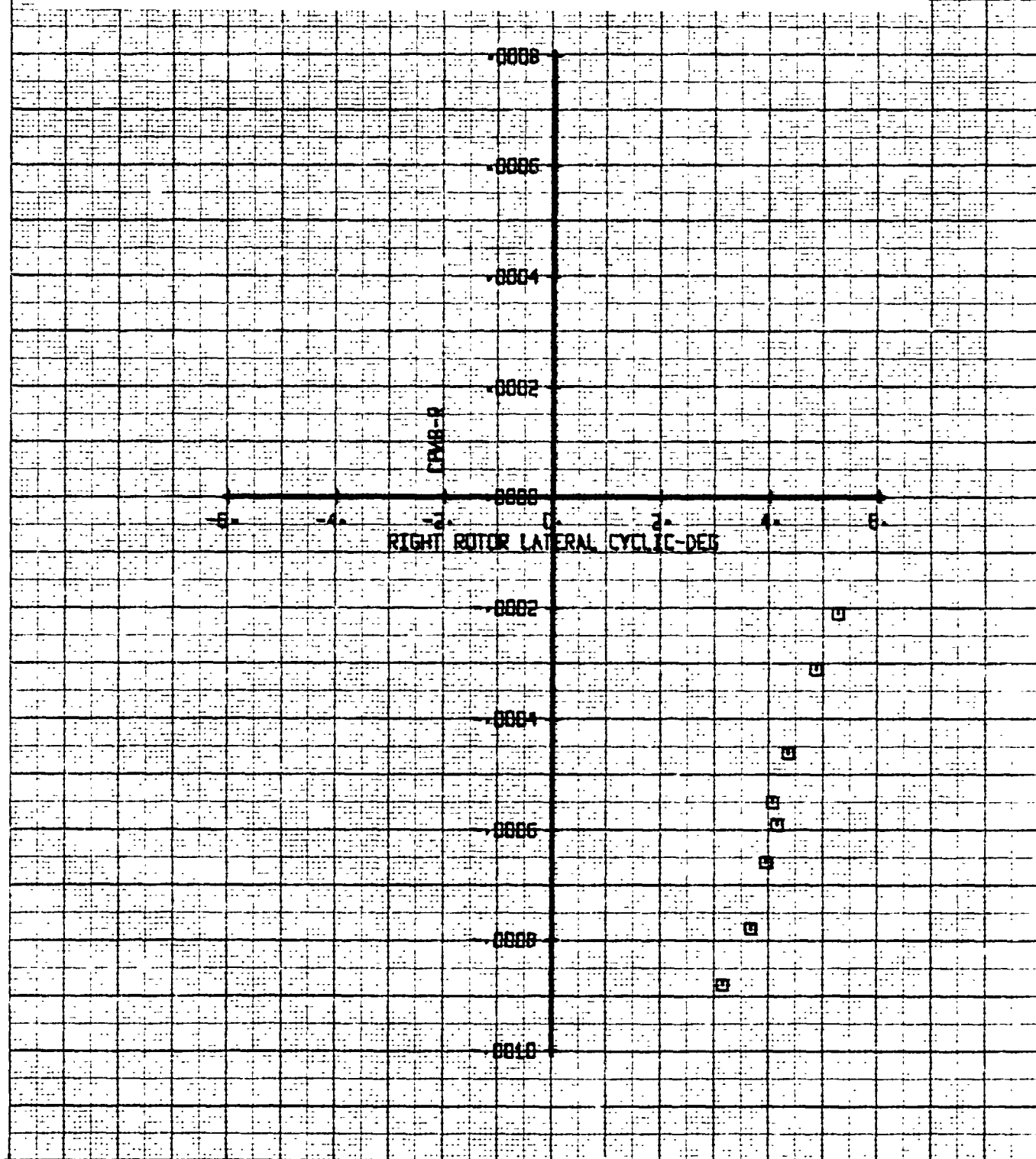


Figure 12-082. Right Rotor Side Force Coefficient Versus Right Rotor Lat. Cyclic -Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | VR0950-1 | LEGEND | | | | |
| LEFT ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FUS |
| RIGHT ROTOR DATA | | 0 | 120 | 15 | 180 | -2 |
| | | | | | | 20 |

Figure 12-083. Right Rotor Pitching Moment Coefficient Versus Right Rotor Lat. Cyclic ~Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.



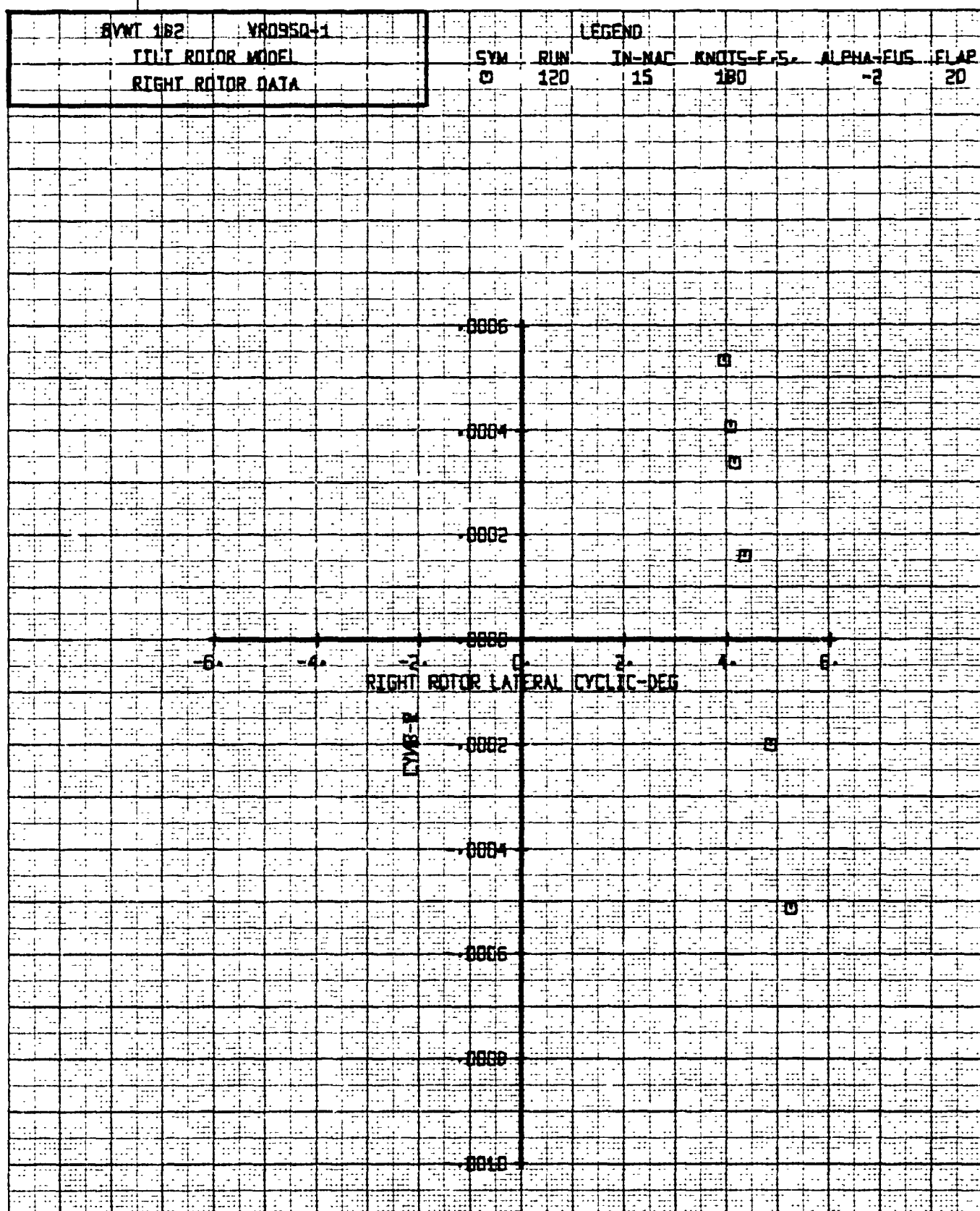


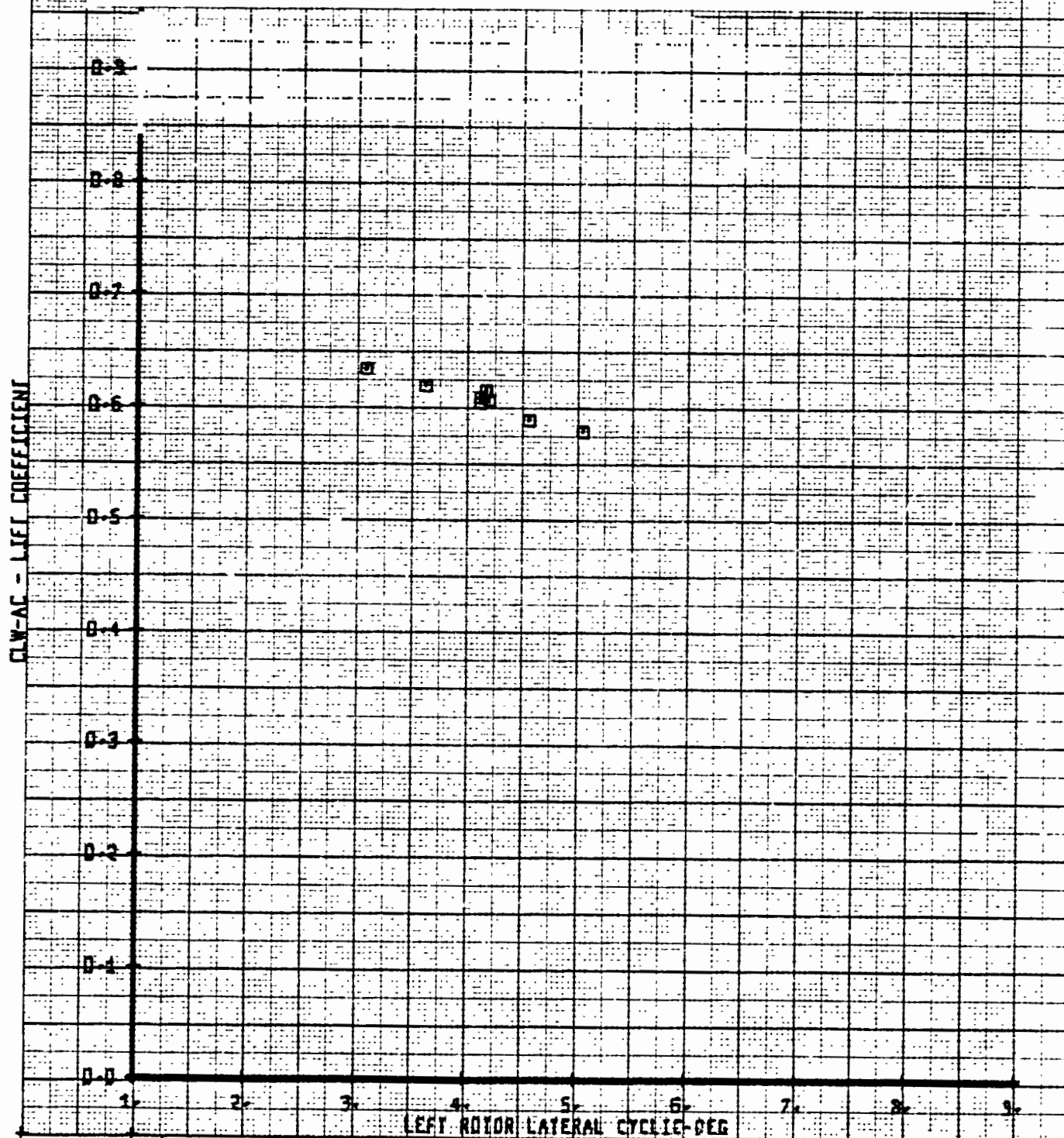
Figure 12-084. Right Rotor Yawing Moment Coefficient Versus Right Rotor Lat. Cyclic ~Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 kts.

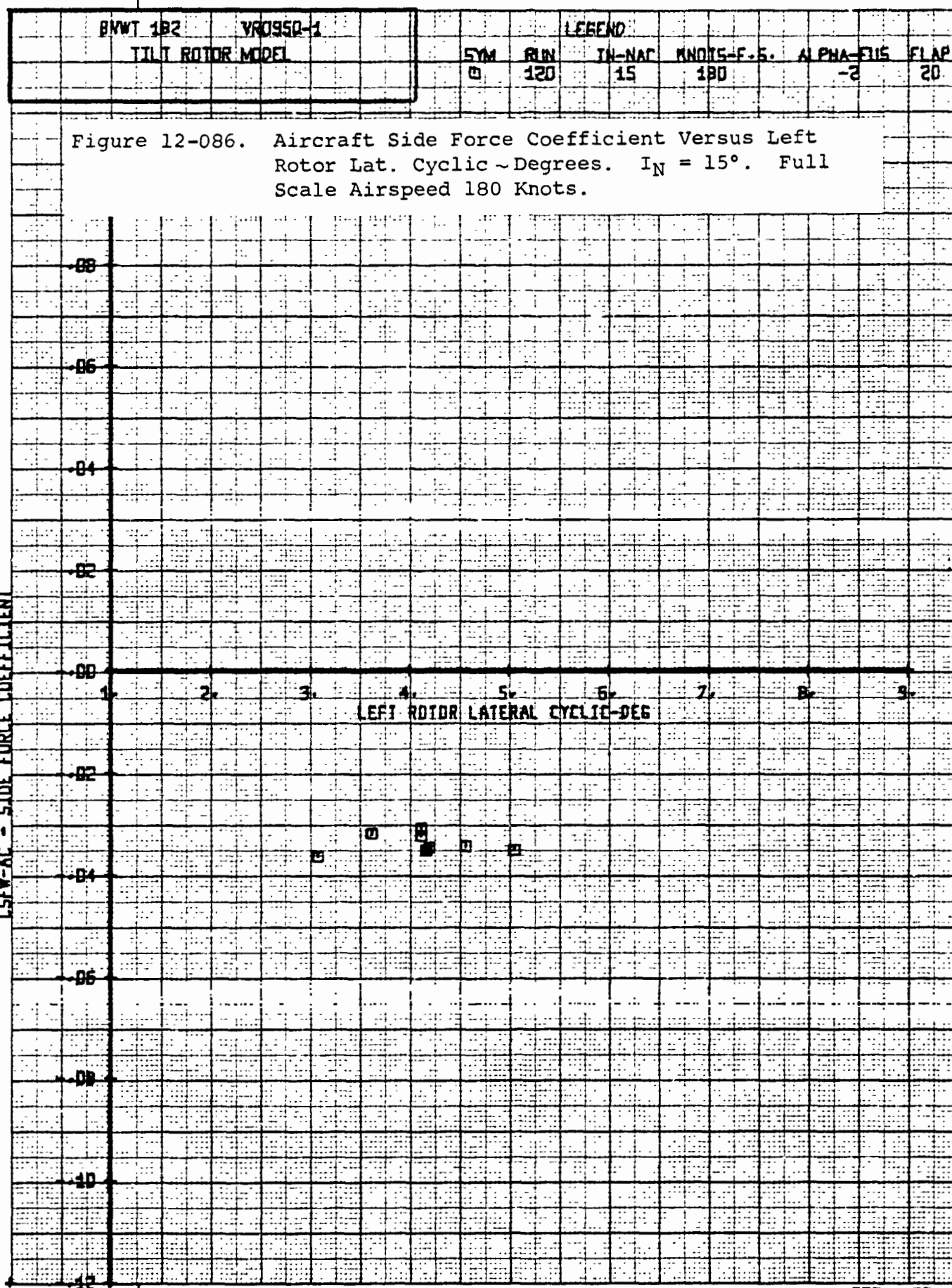
12-085

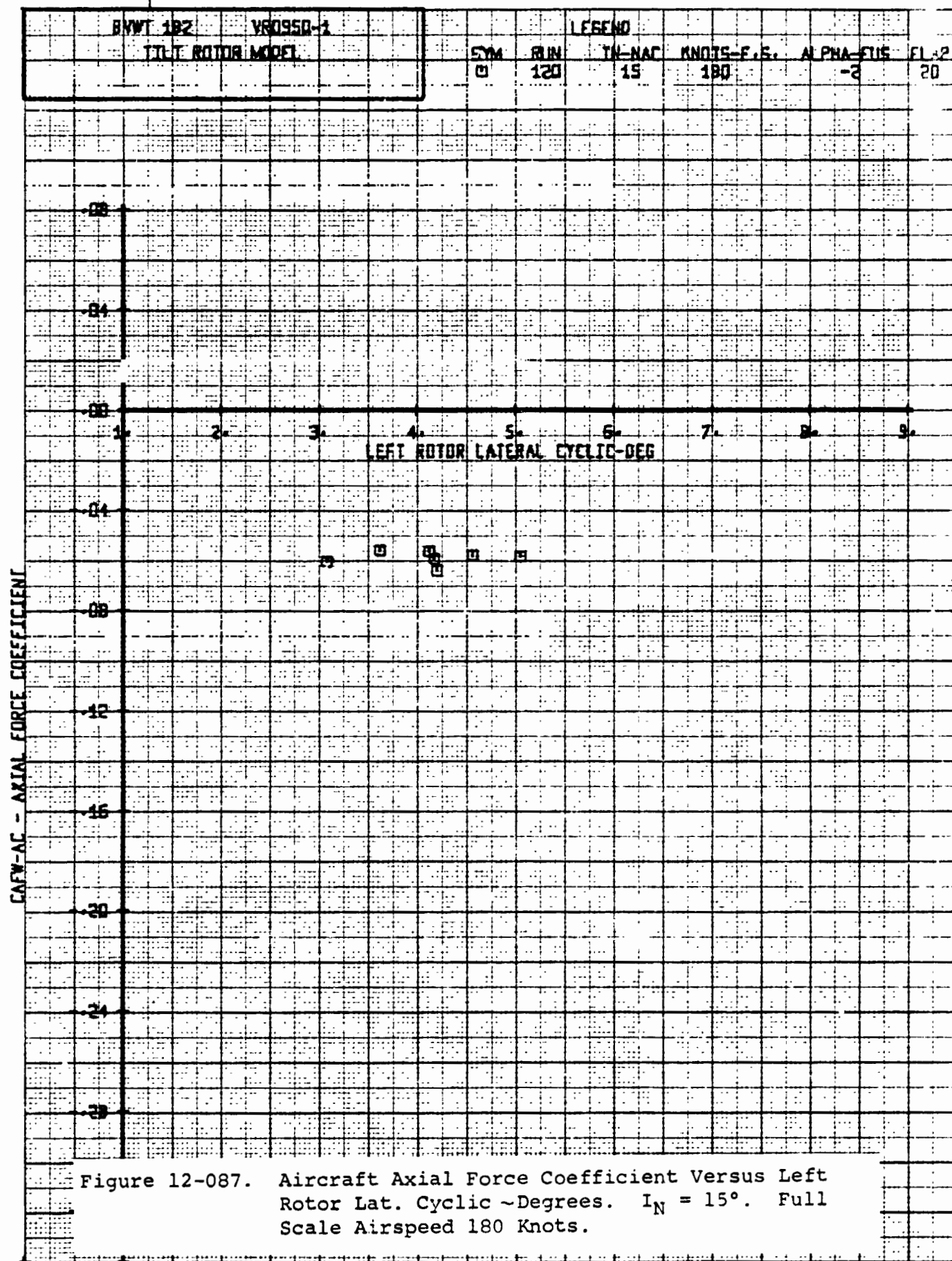
D238-10000-3

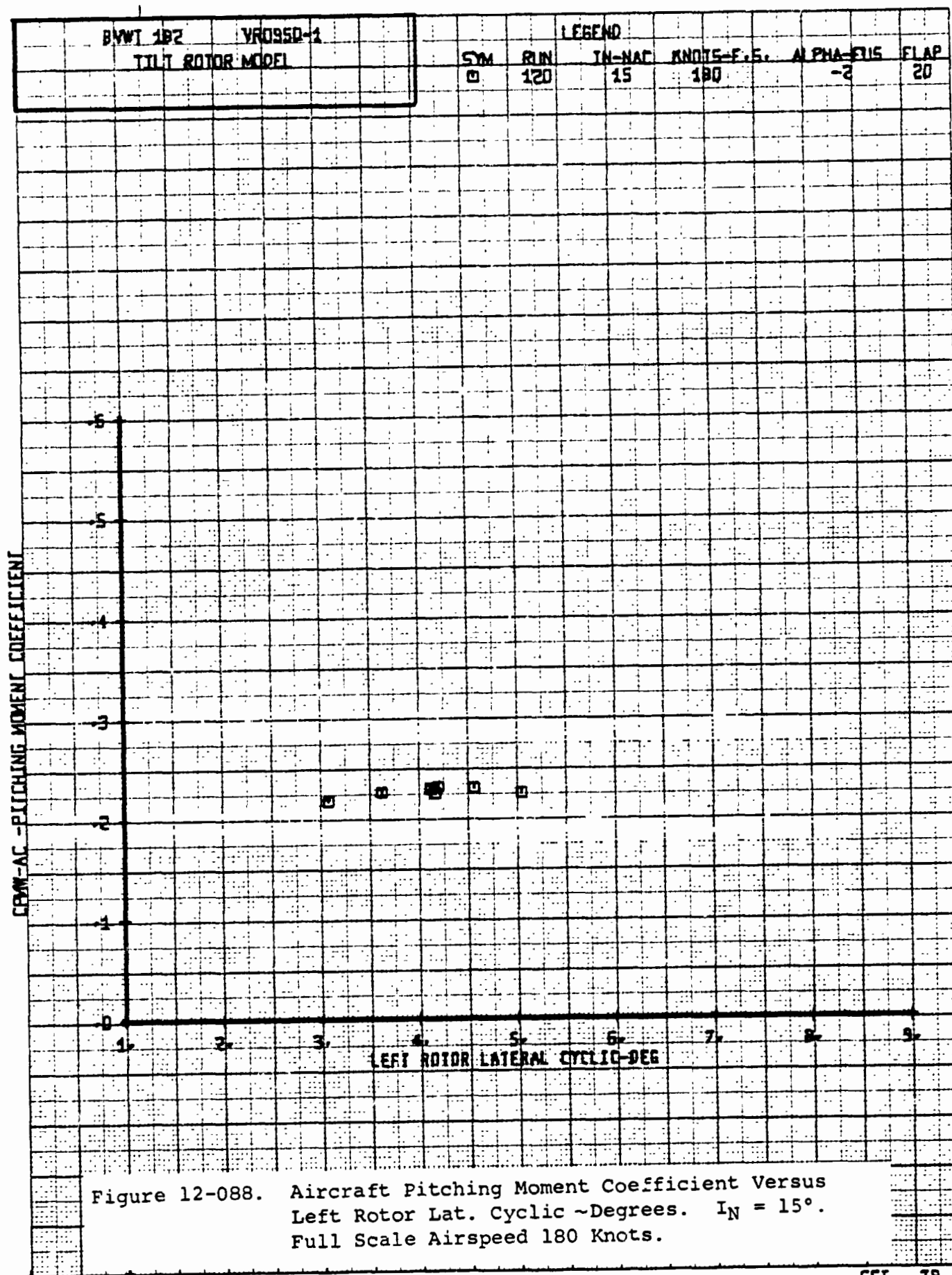
| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | VR0950-1 | LEGEND | | | | |
| TILT ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-CLS |
| | | □ | 120 | 15 | 180 | -2 |
| | | | | | | FLAP 20 |

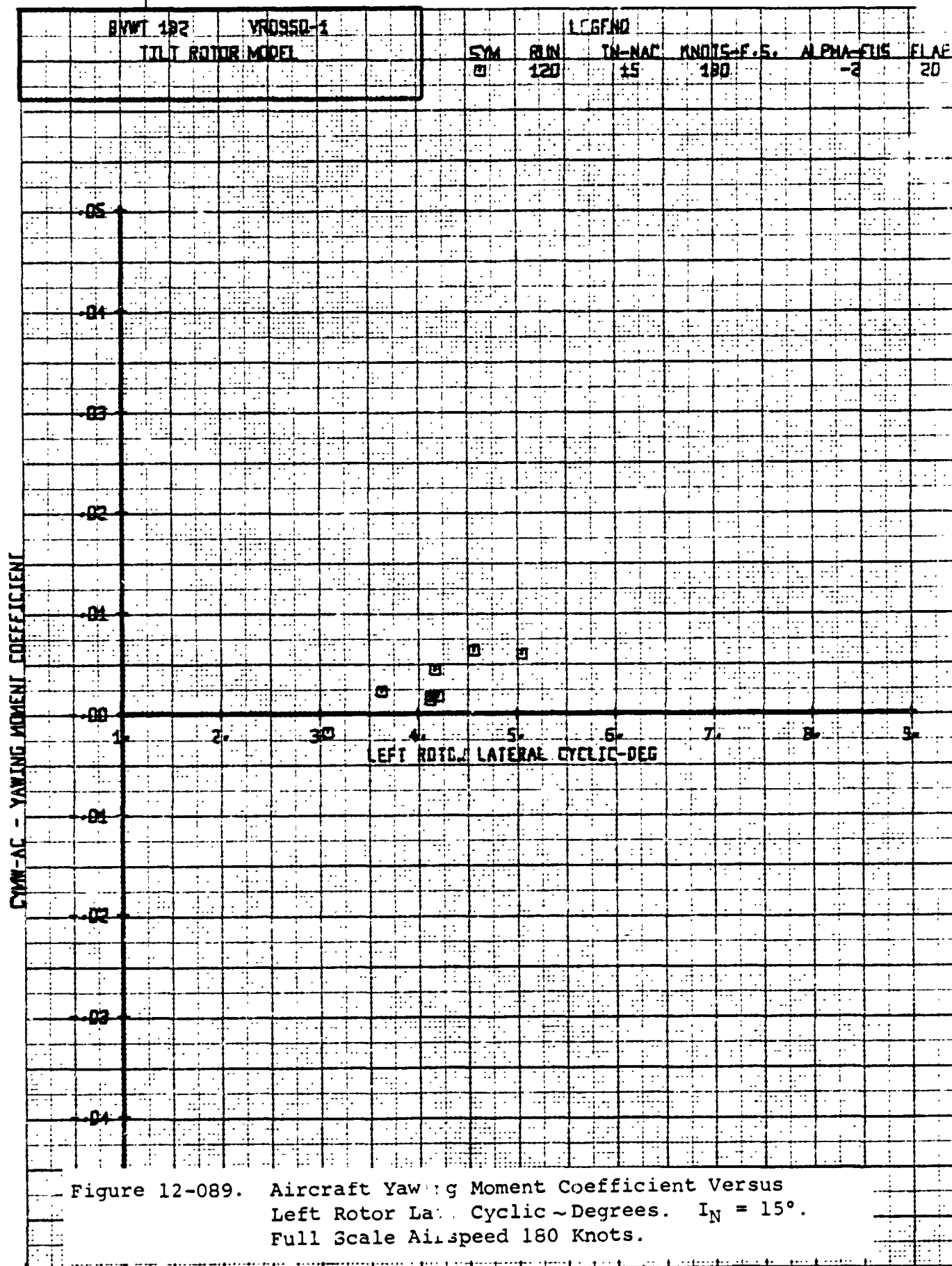
Figure 12-085. Aircraft Lift Coefficient Versus Left Rotor Lat. Cyclic ~Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

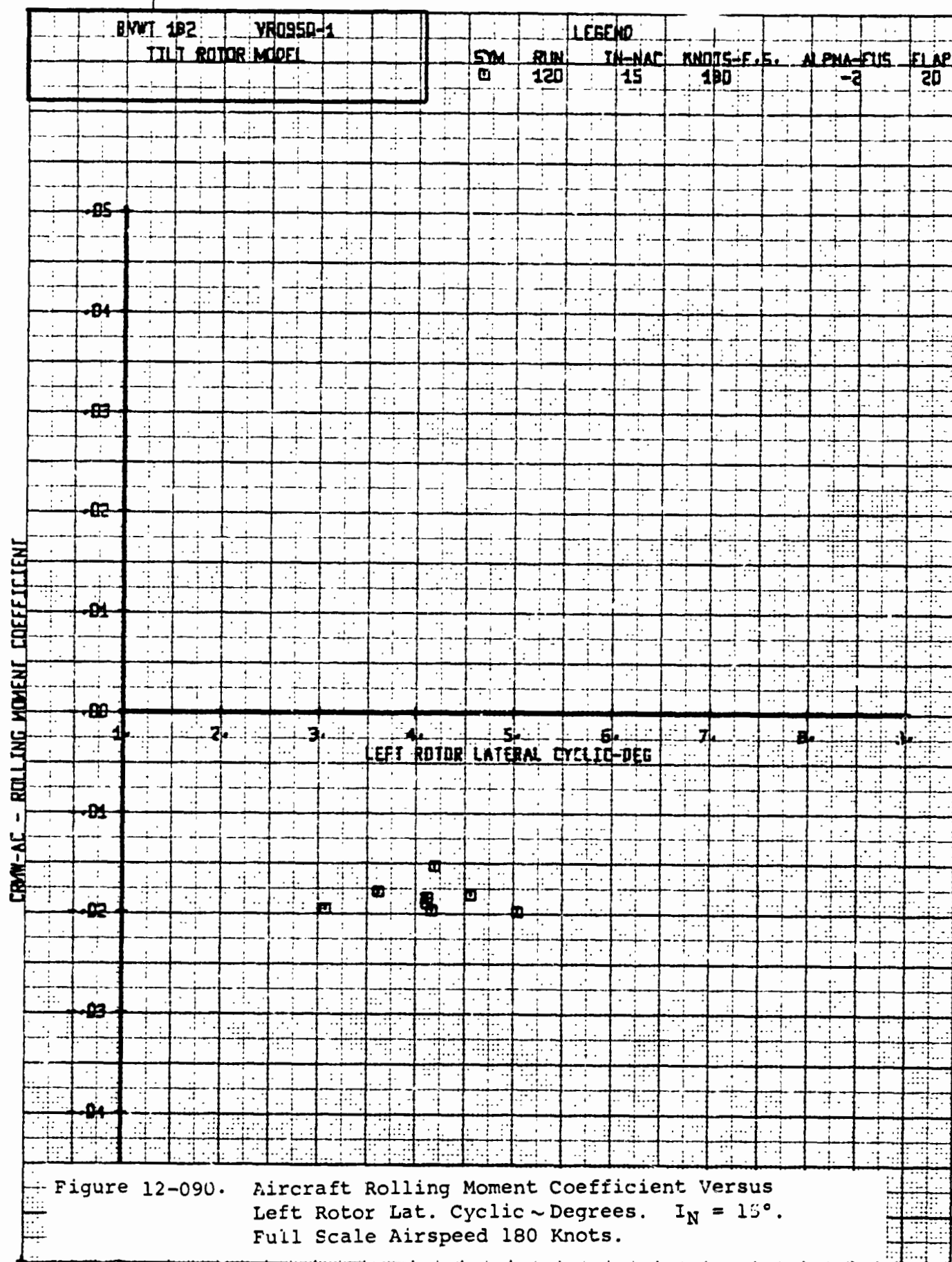












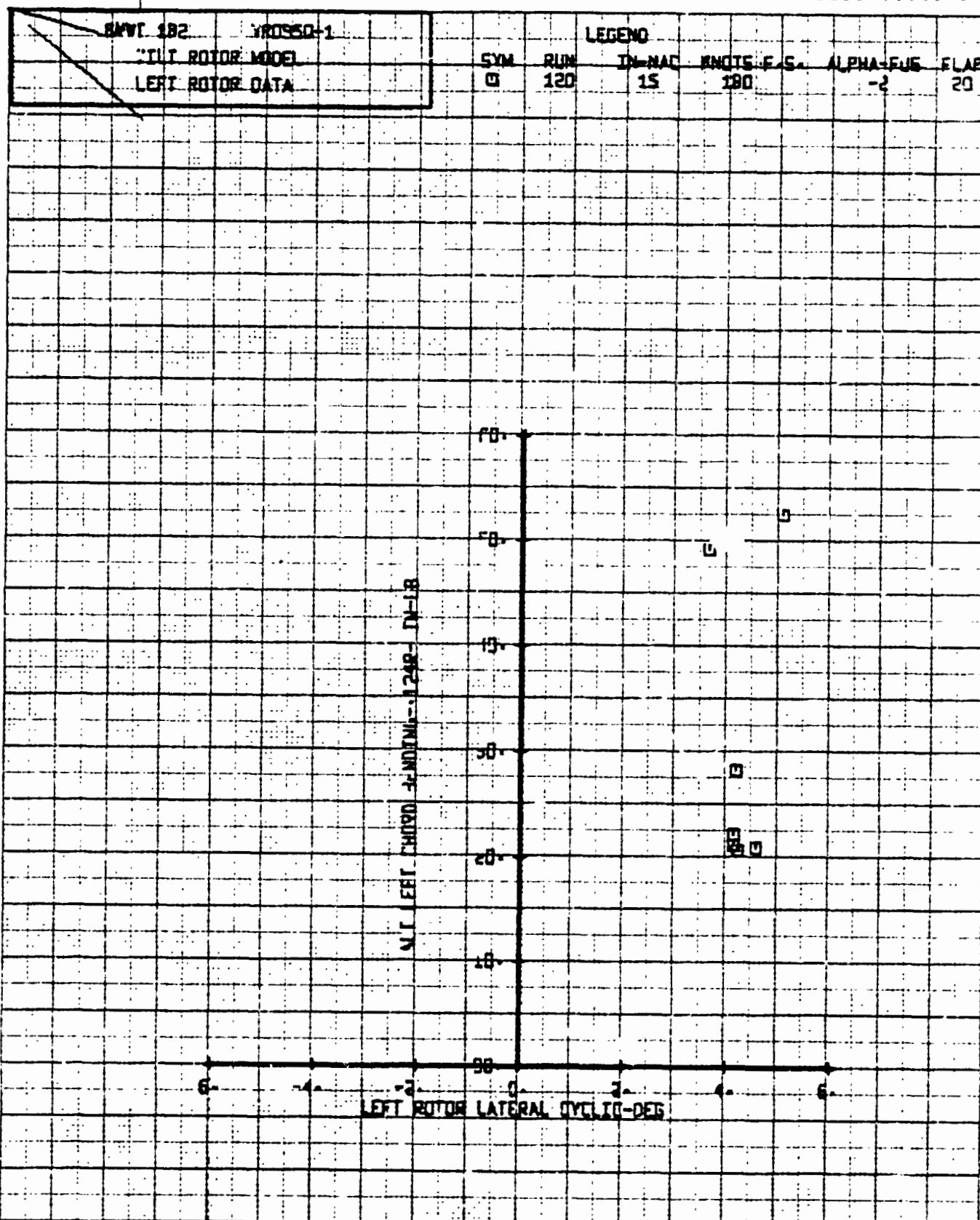
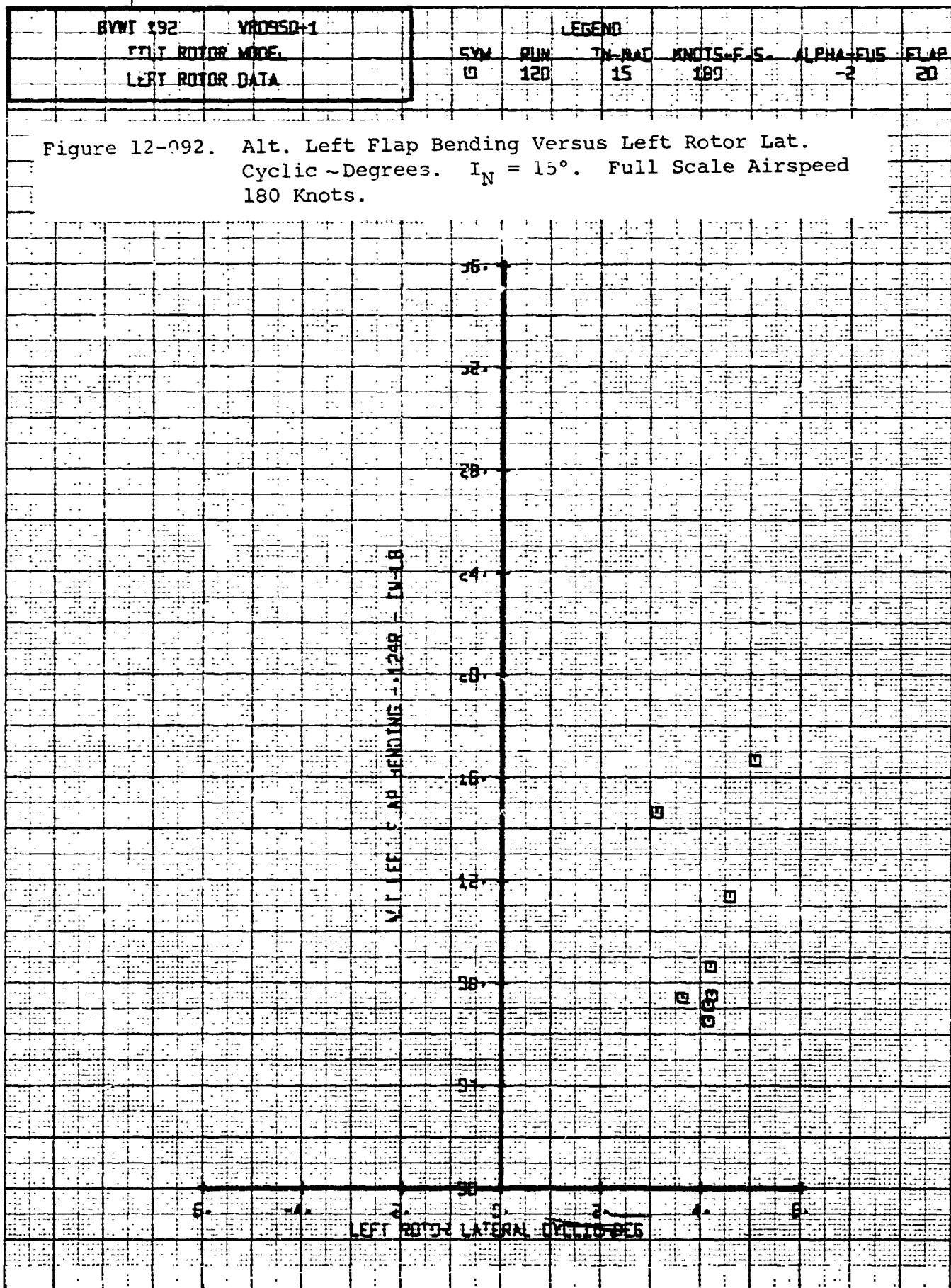
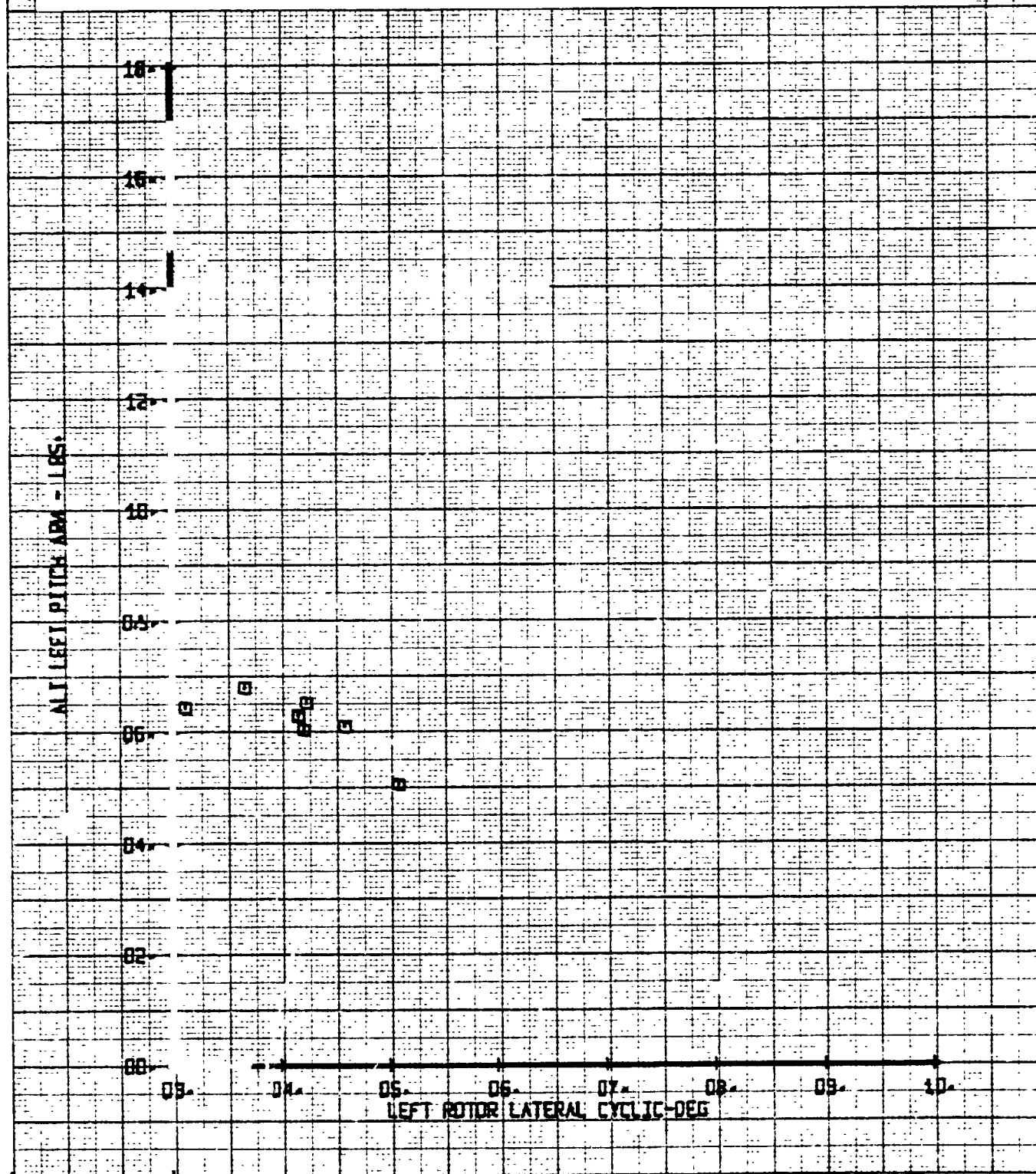


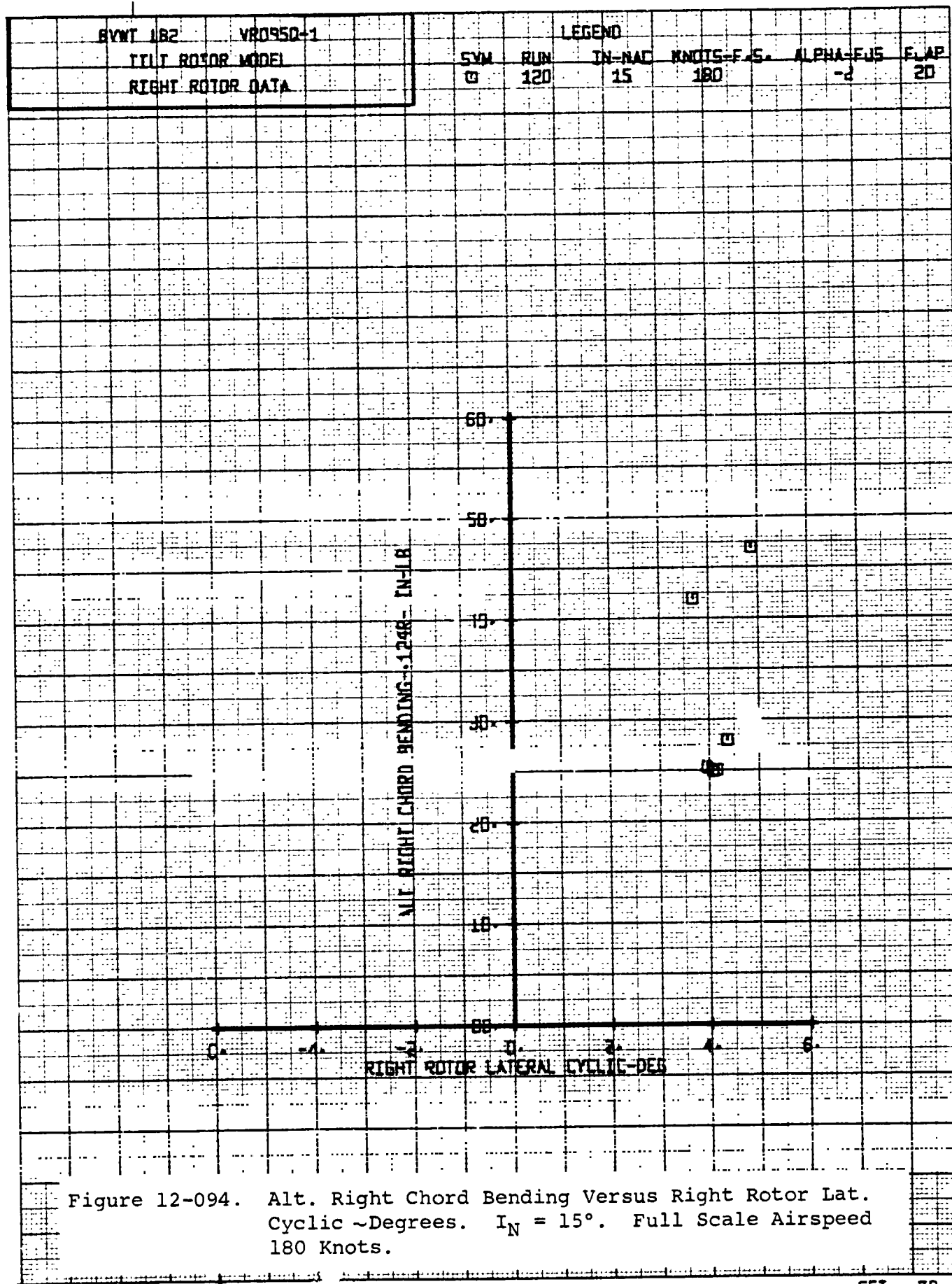
Figure 12-091. Alt. Left Chord Bending Versus Left Rotor Lat. Cyclic -Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.



| | | | | | | | | | |
|------------------|----------|-----|-----|--------|--------|--------|--------|--------|--------|
| BYWT 182 | VR0950-1 | SYM | SYM | LEGEND | | | | | |
| TTT ENTIRE MODEL | | SYM | SYM | IN-NAC | IN-NAC | IN-NAC | IN-NAC | IN-NAC | IN-NAC |
| 132 ROTOR DATA | | SYM | SYM | 15 | 15 | 15 | 15 | 15 | 15 |
| | | SYM | SYM | 180 | 180 | 180 | 180 | 180 | 180 |
| | | SYM | SYM | 20 | 20 | 20 | 20 | 20 | 20 |

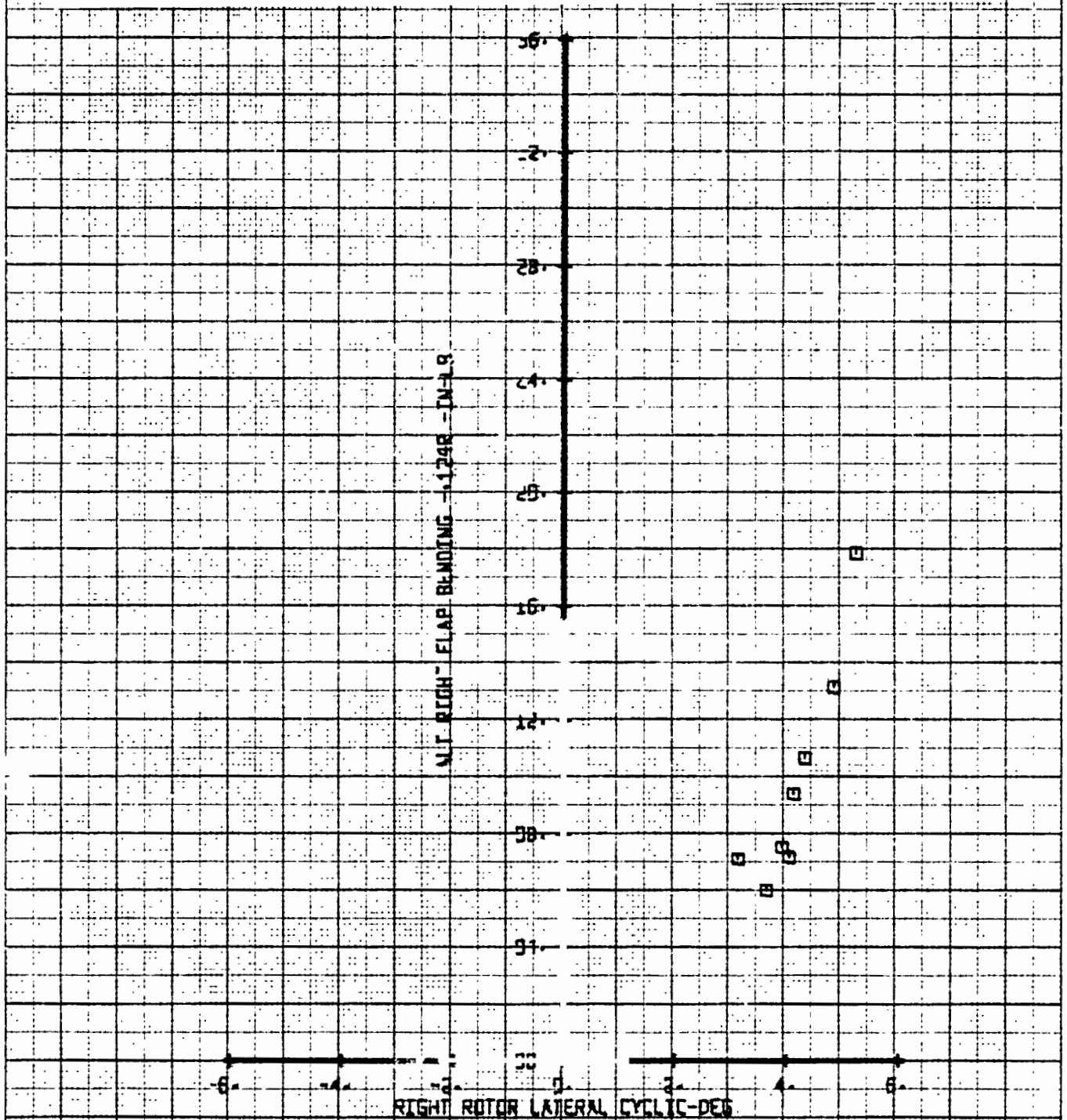
Figure 12-093. Alt. Left Pitch Link Load Versus Left Rotor Lat. Cyclic ~Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

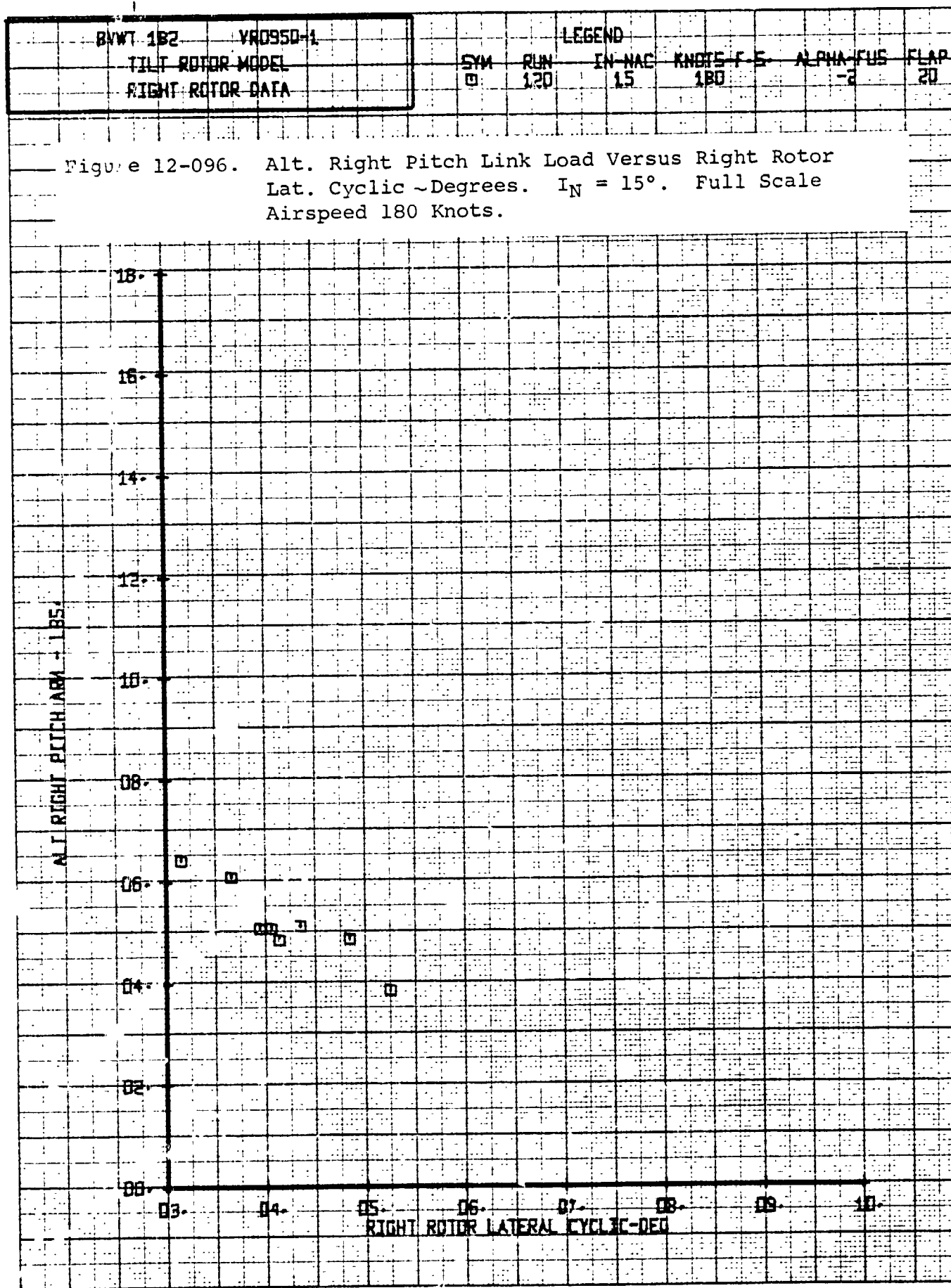




| | | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|------|
| BYWT 182 | VR0950-1 | LEGEND | | | | | |
| LEFT ROTOR NAME | | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FUS | FLAP |
| RIGHT ROTOR DATA | | □ | 120 | 15 | 180 | -2 | 20 |

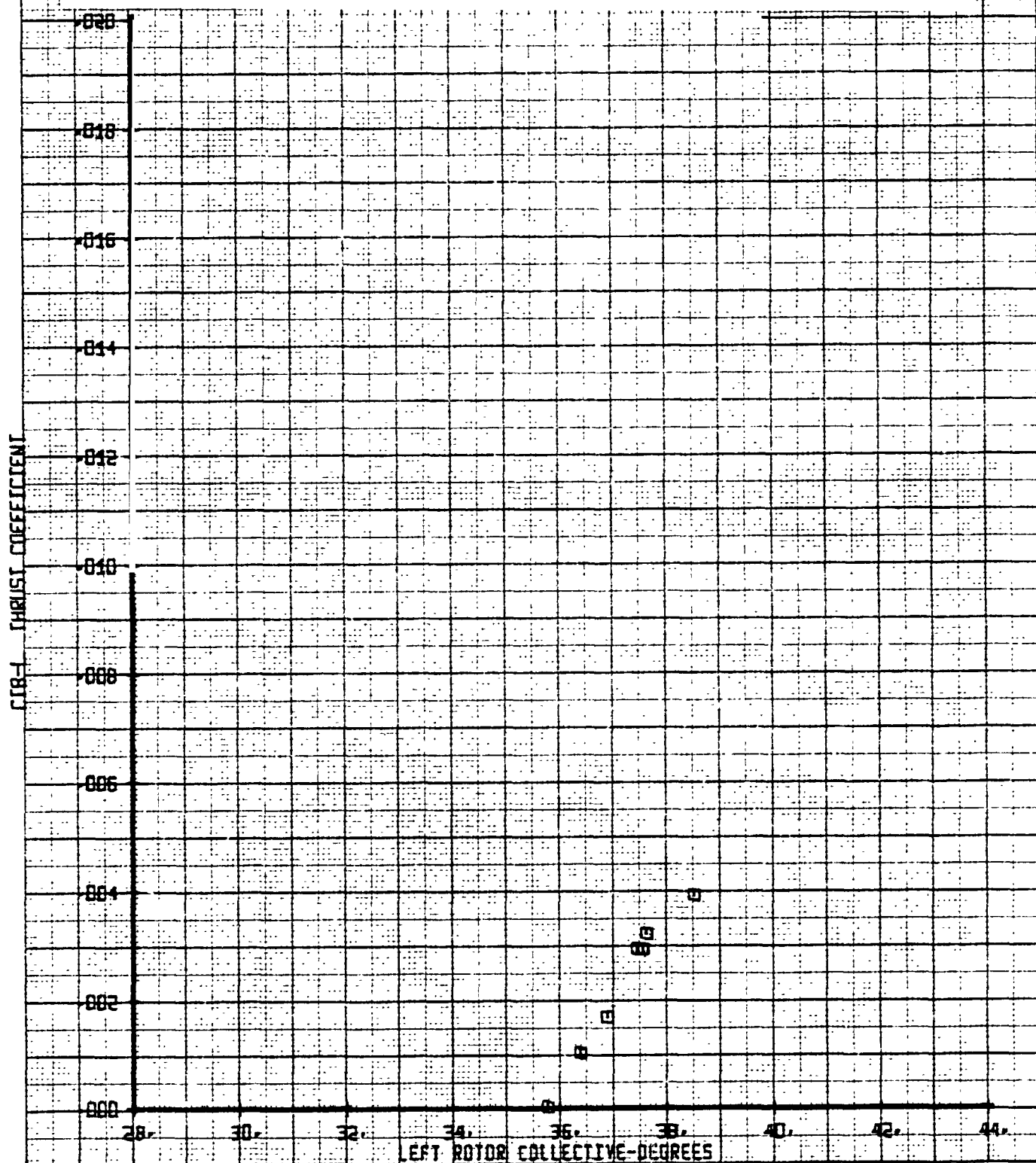
Figure 12-095. Alt. Right Flap Bending Versus Right Rotor Lat. Cyclic ~Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.





| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | VR0950-1 | LEGEND | | | | |
| LEFT ROTOR MODEL | | SYM | RUN | IN-RAC | KNOTS-F.S. | ALPHA-FUS |
| LEFT ROTOR DATA | | 0 | 123 | 15 | 180 | -2 |
| | | | | | | 20 |

Figure 12-097. Left Rotor Thrust Coefficient Versus Left Rotor Collective ~Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.



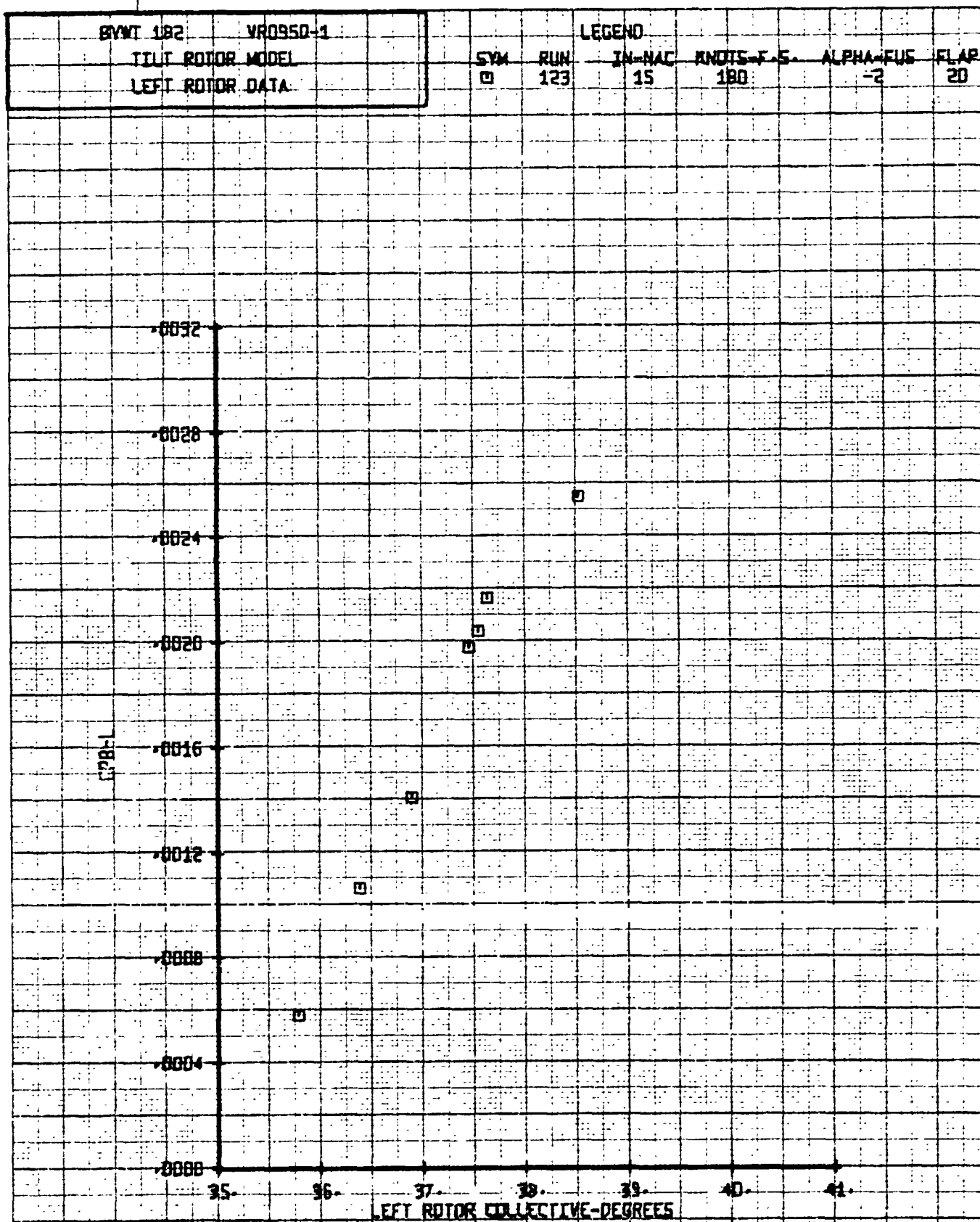


Figure 12-098. Left Rotor Power Coefficient Versus Left Rotor Collective ~Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

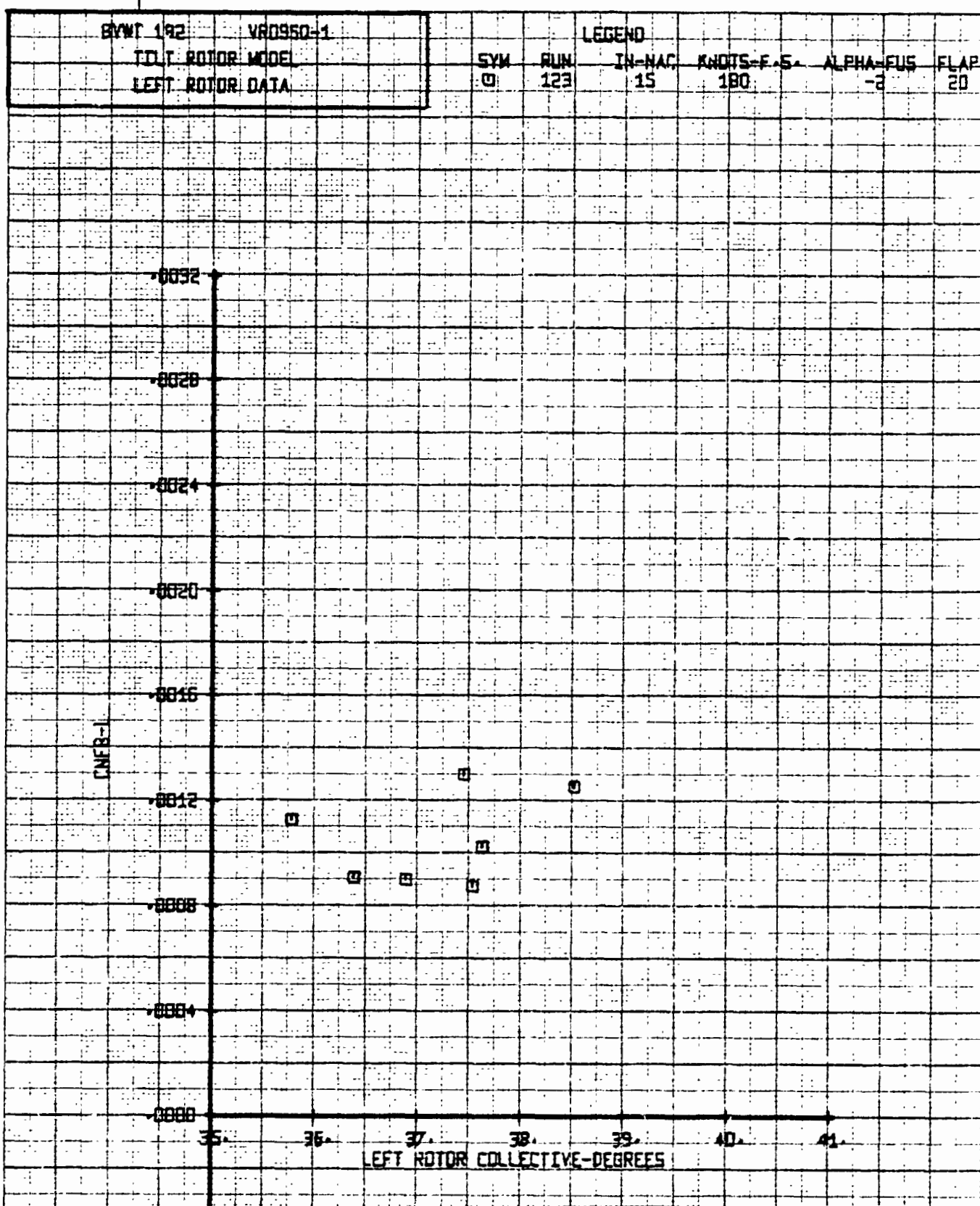
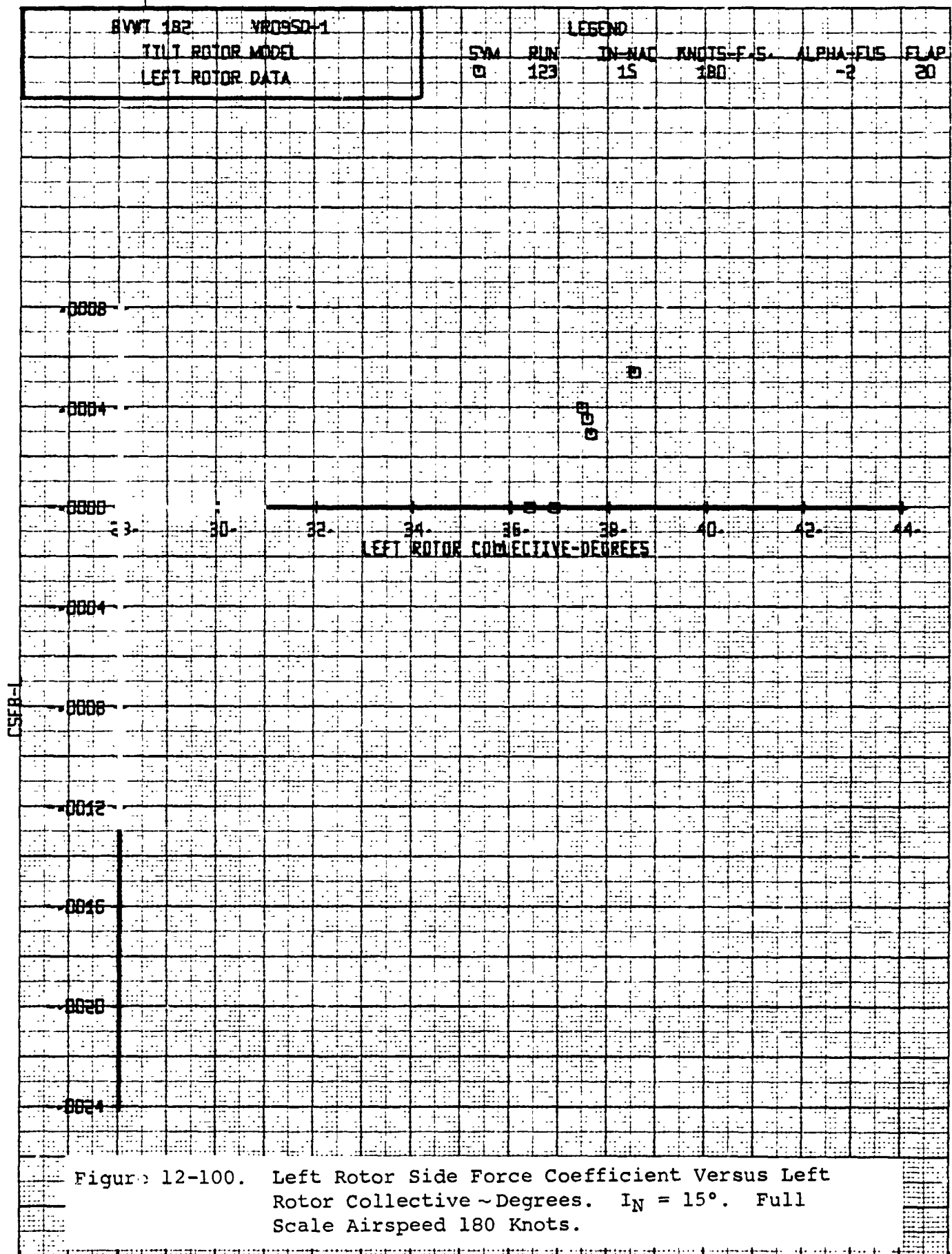
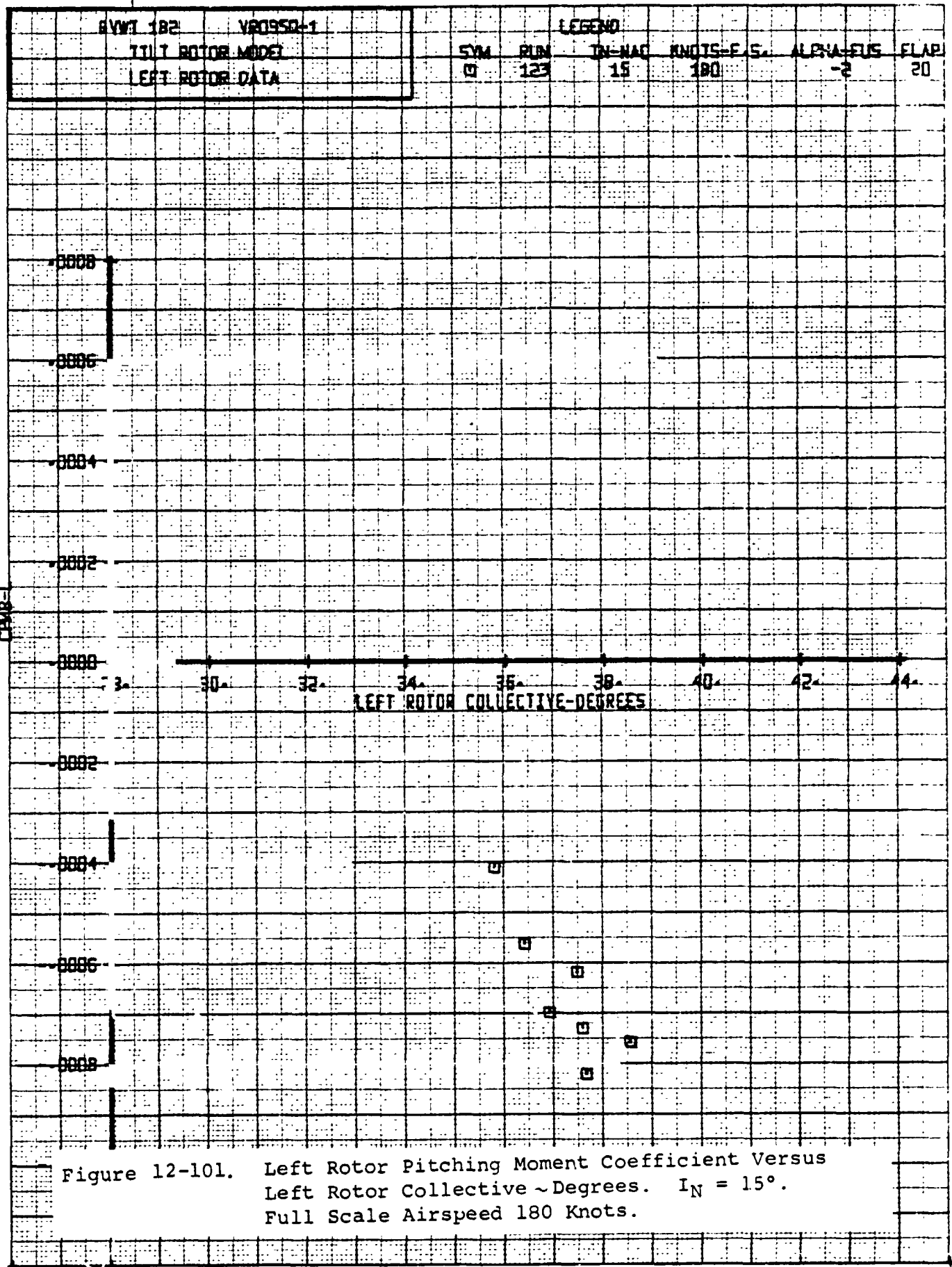
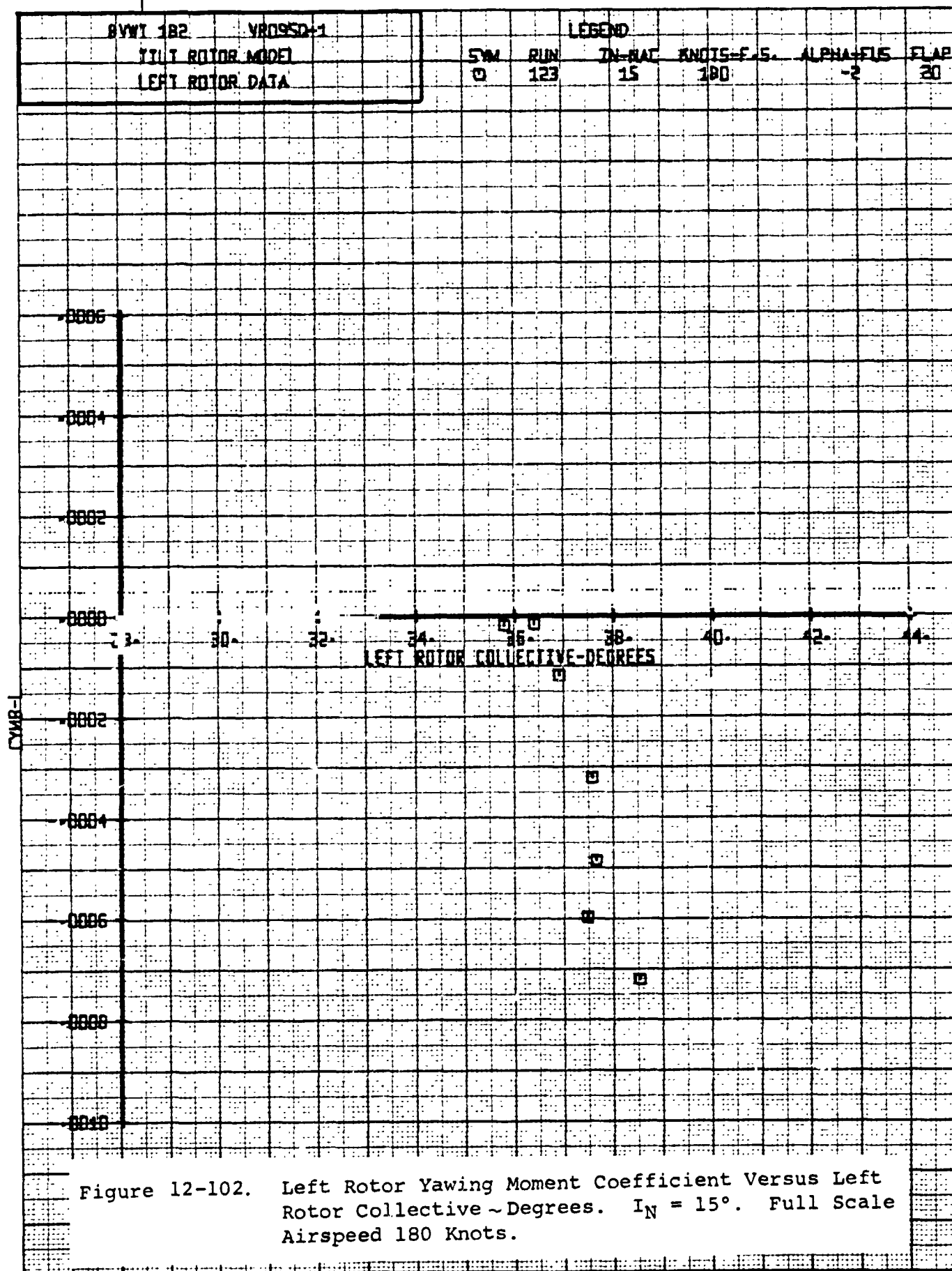
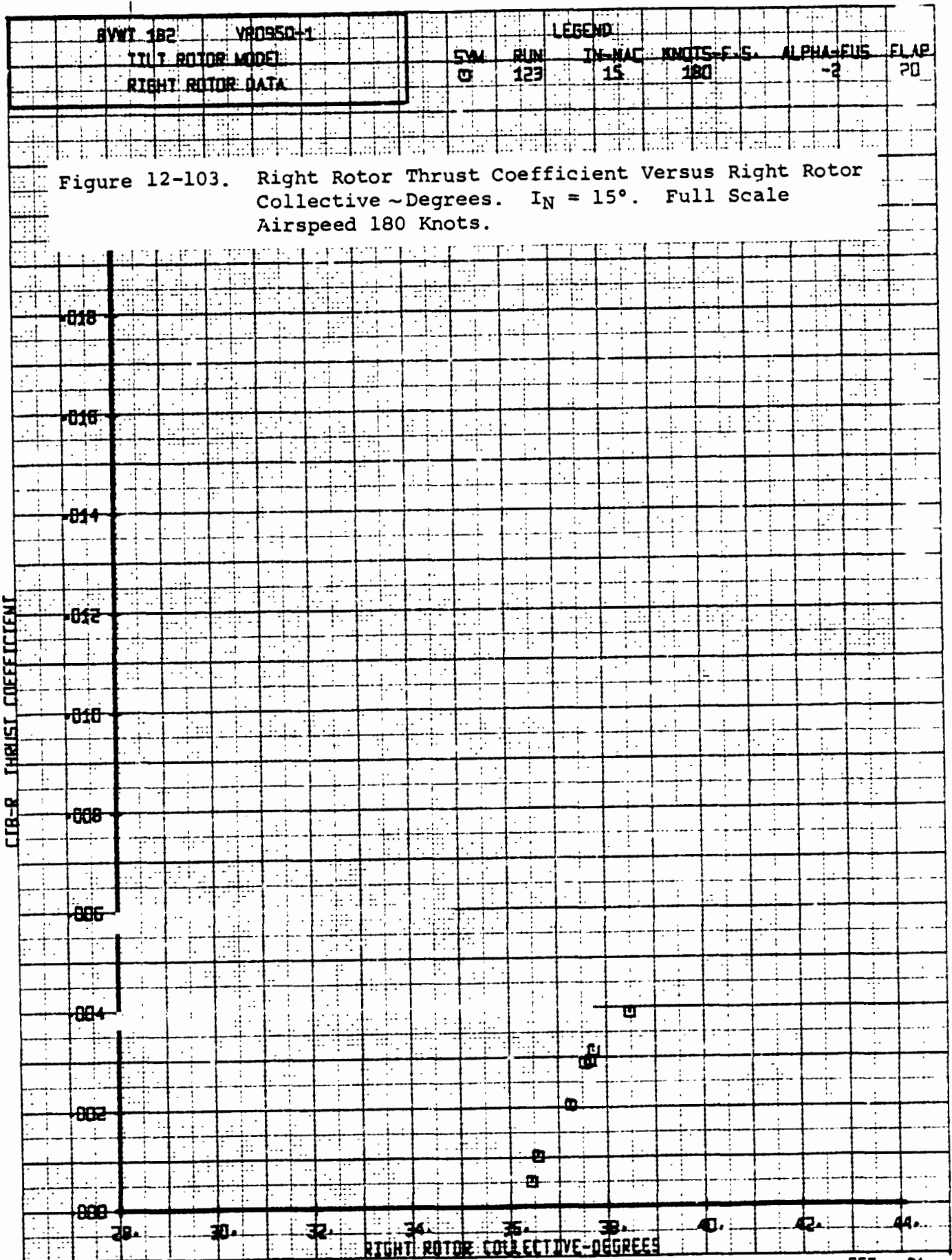


Figure 12-099. Left Rotor Normal Force Coefficient Versus Left Rotor Collective ~Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.









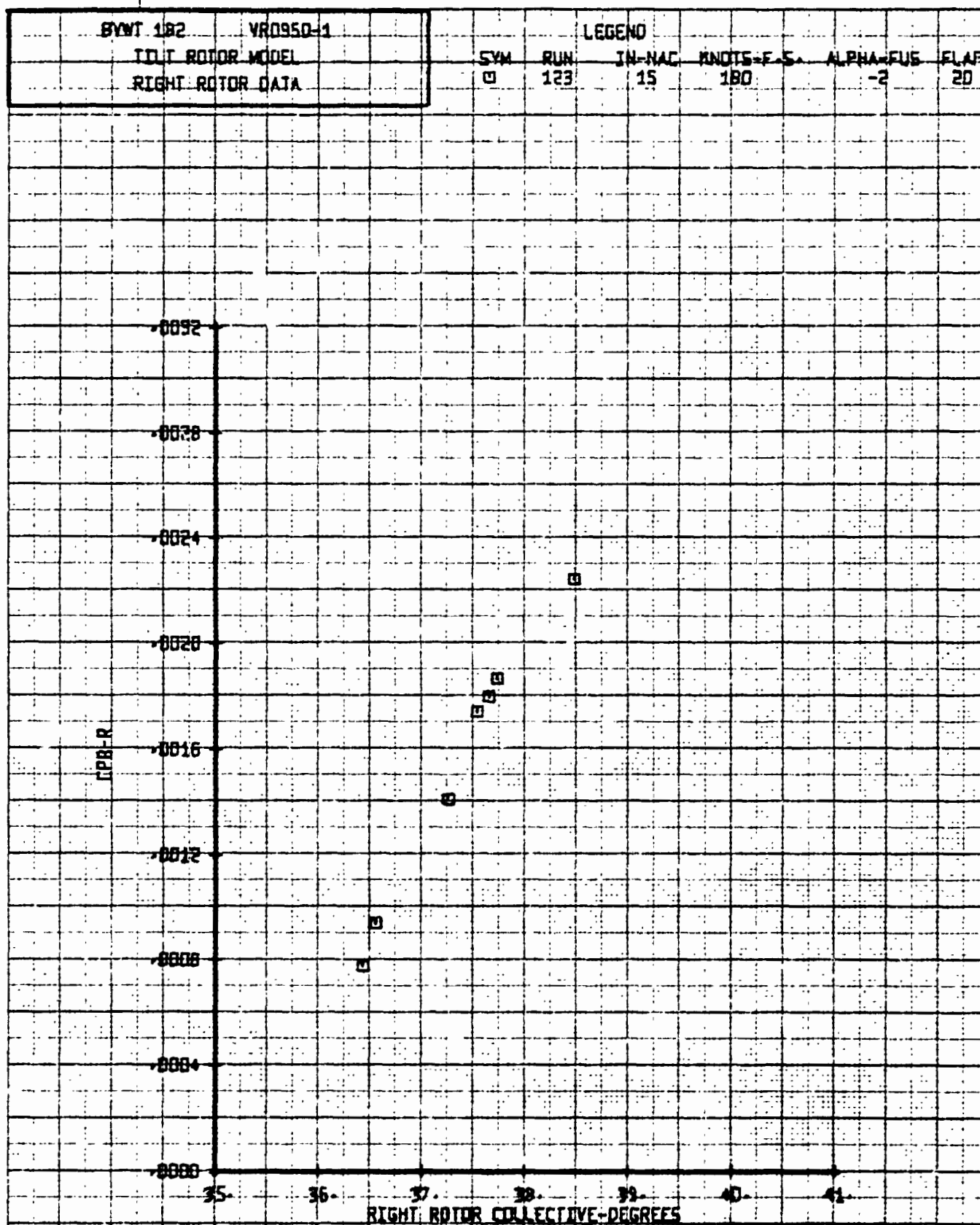


Figure 12-104. Right Rotor Power Coefficient Versus Right Rotor Collective ~Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

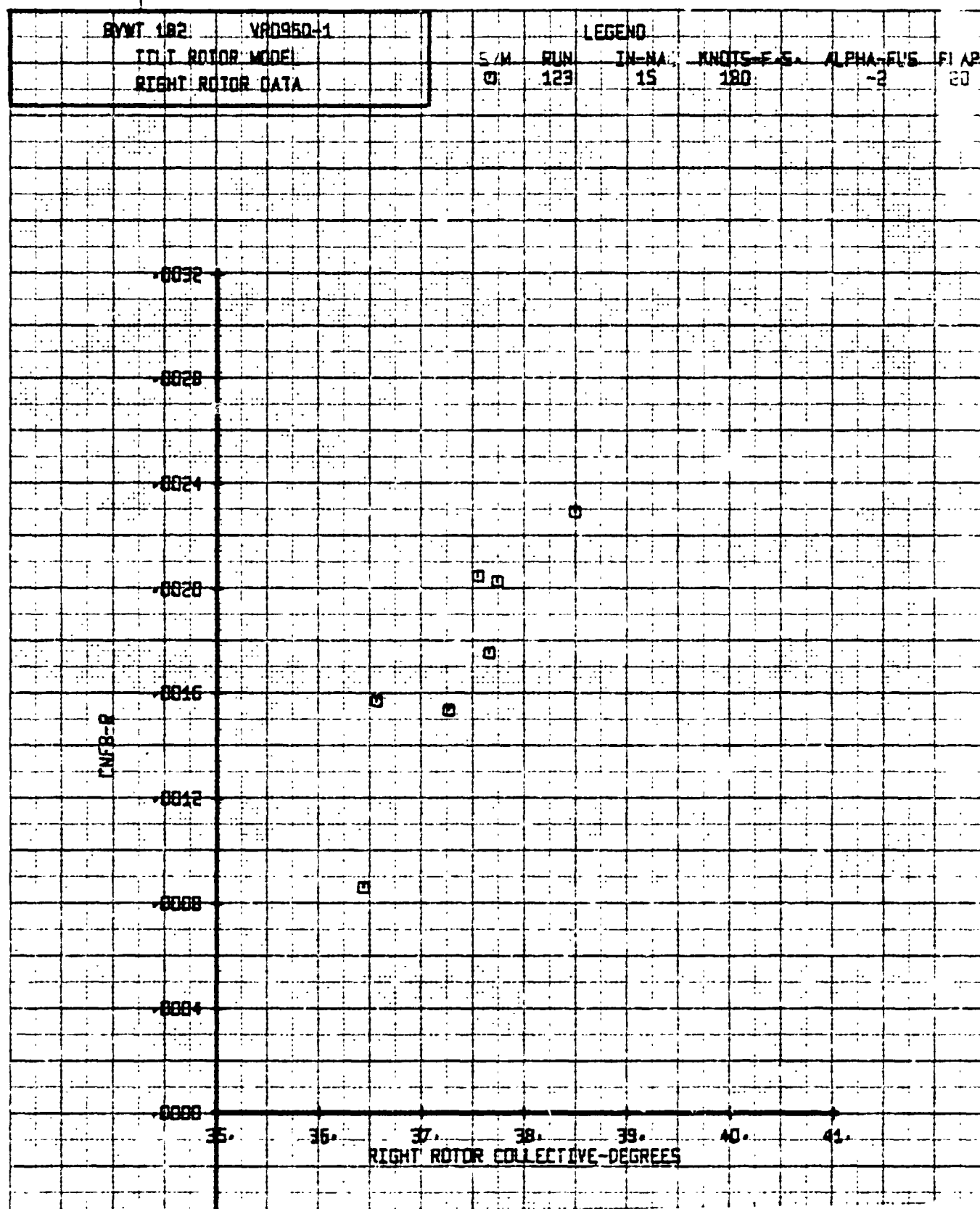
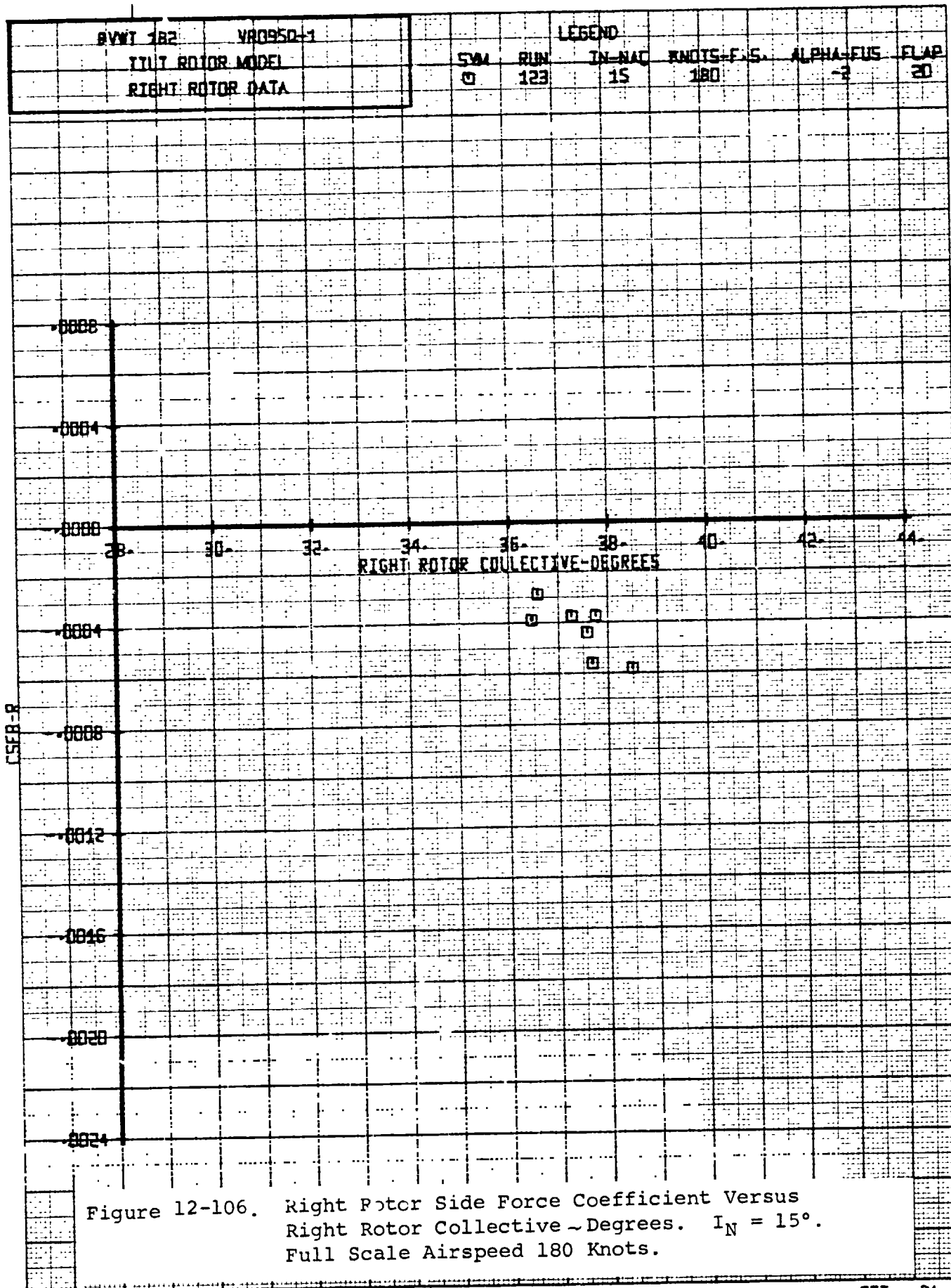


Figure 12-105. Right Rotor Normal Force Coefficient Versus Right Rotor Collective ~Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.



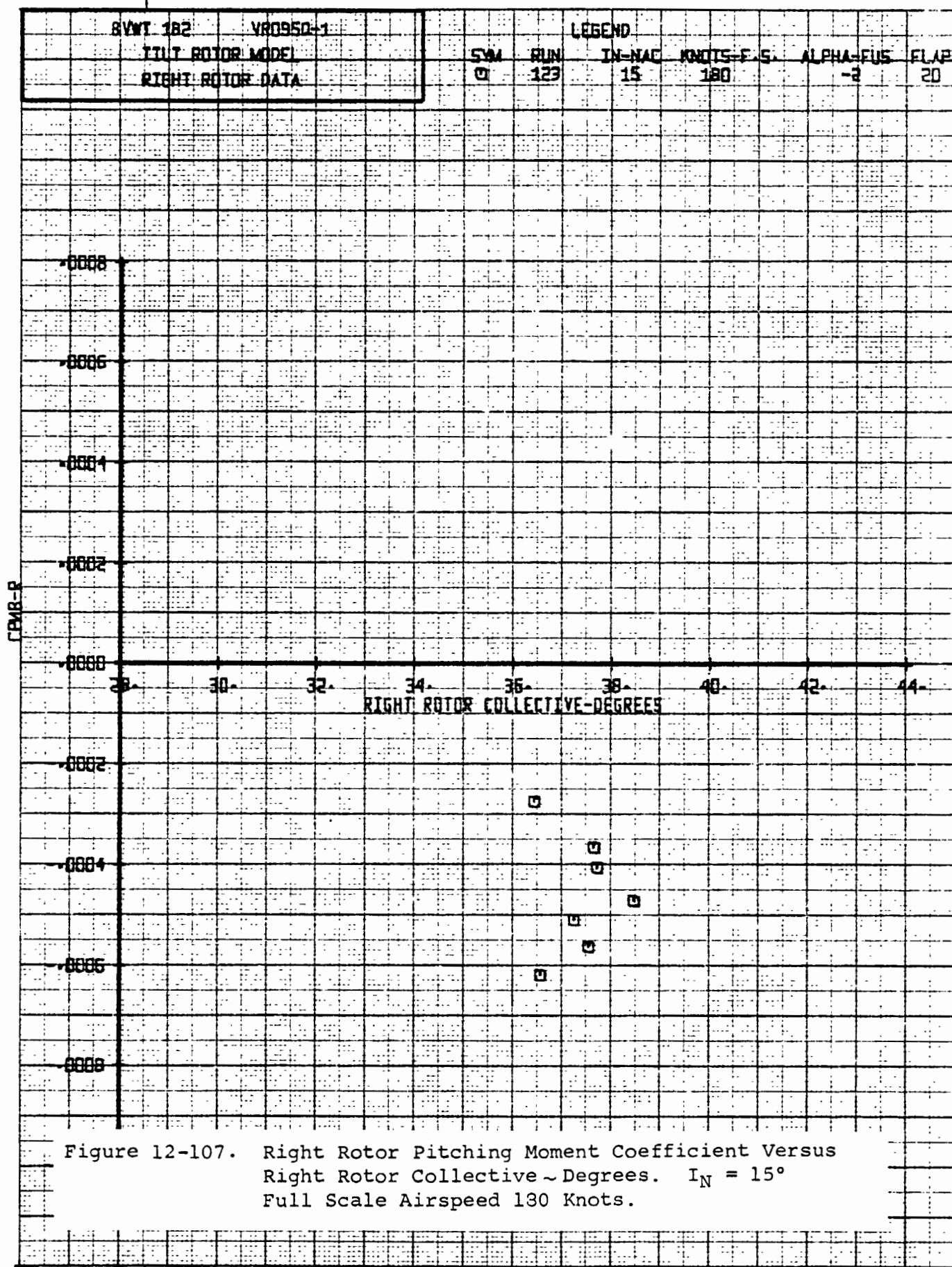
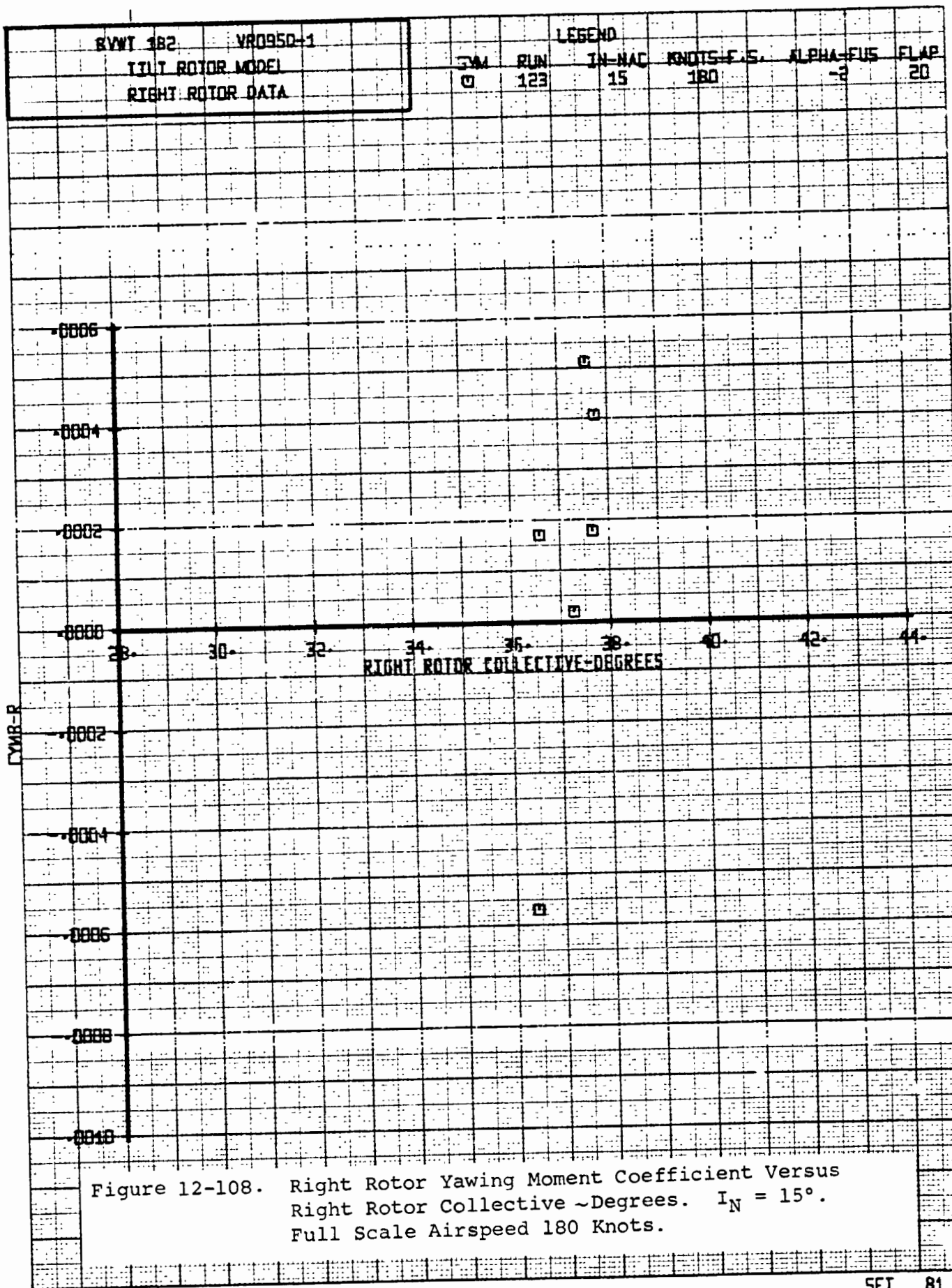
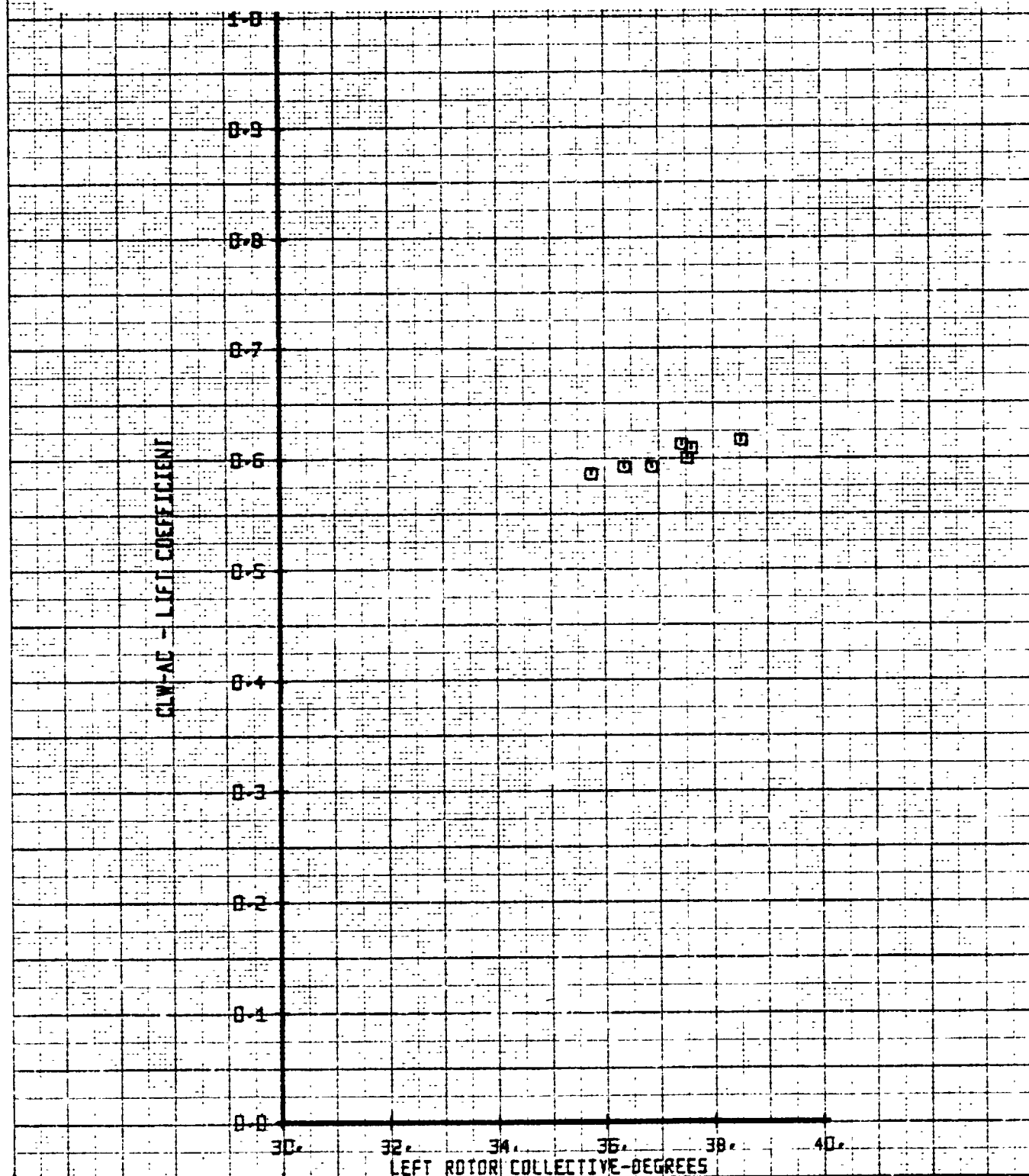


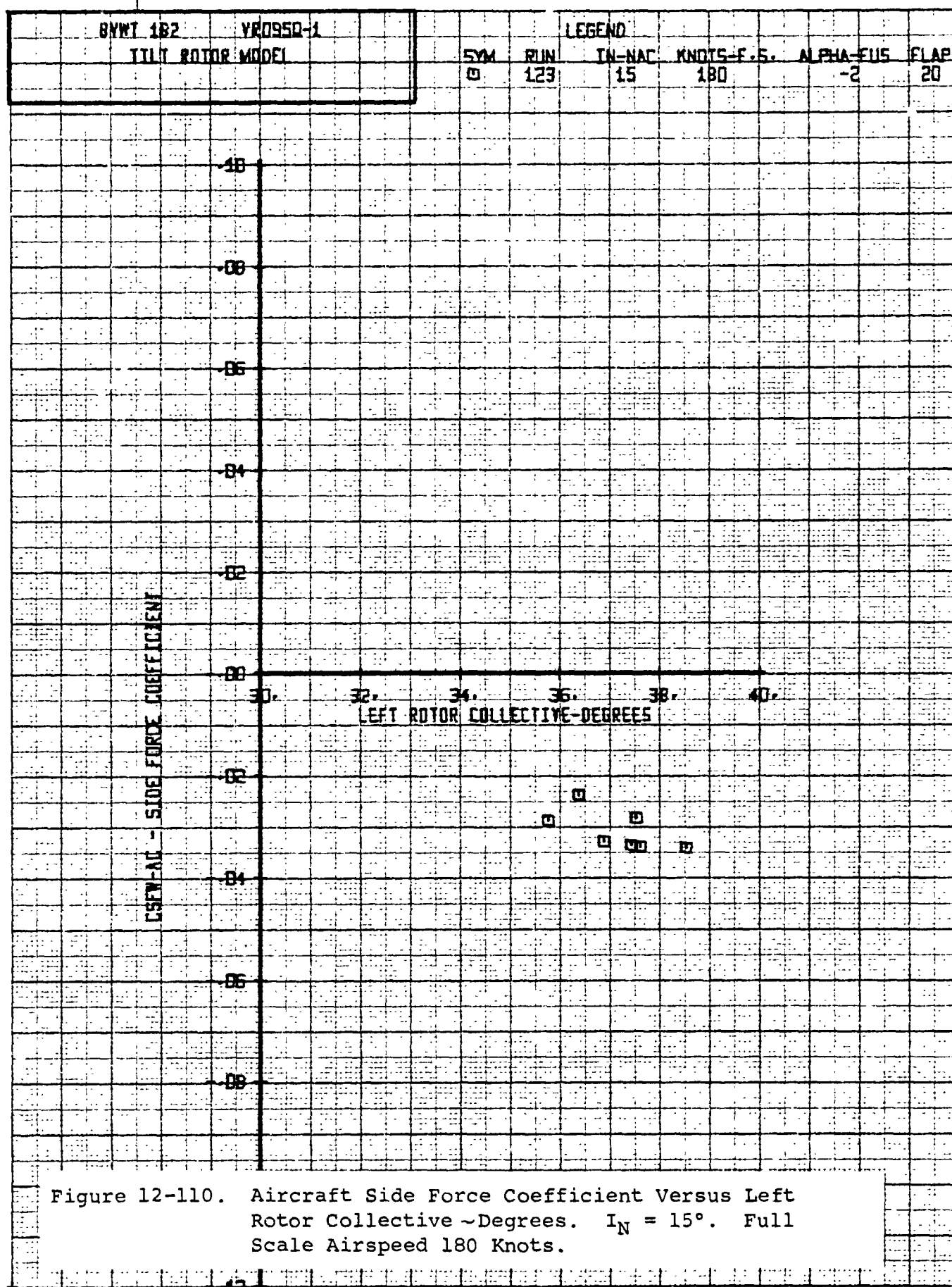
Figure 12-107. Right Rotor Pitching Moment Coefficient Versus Right Rotor Collective ~ Degrees. $I_N = 15^\circ$
Full Scale Airspeed 130 Knots.

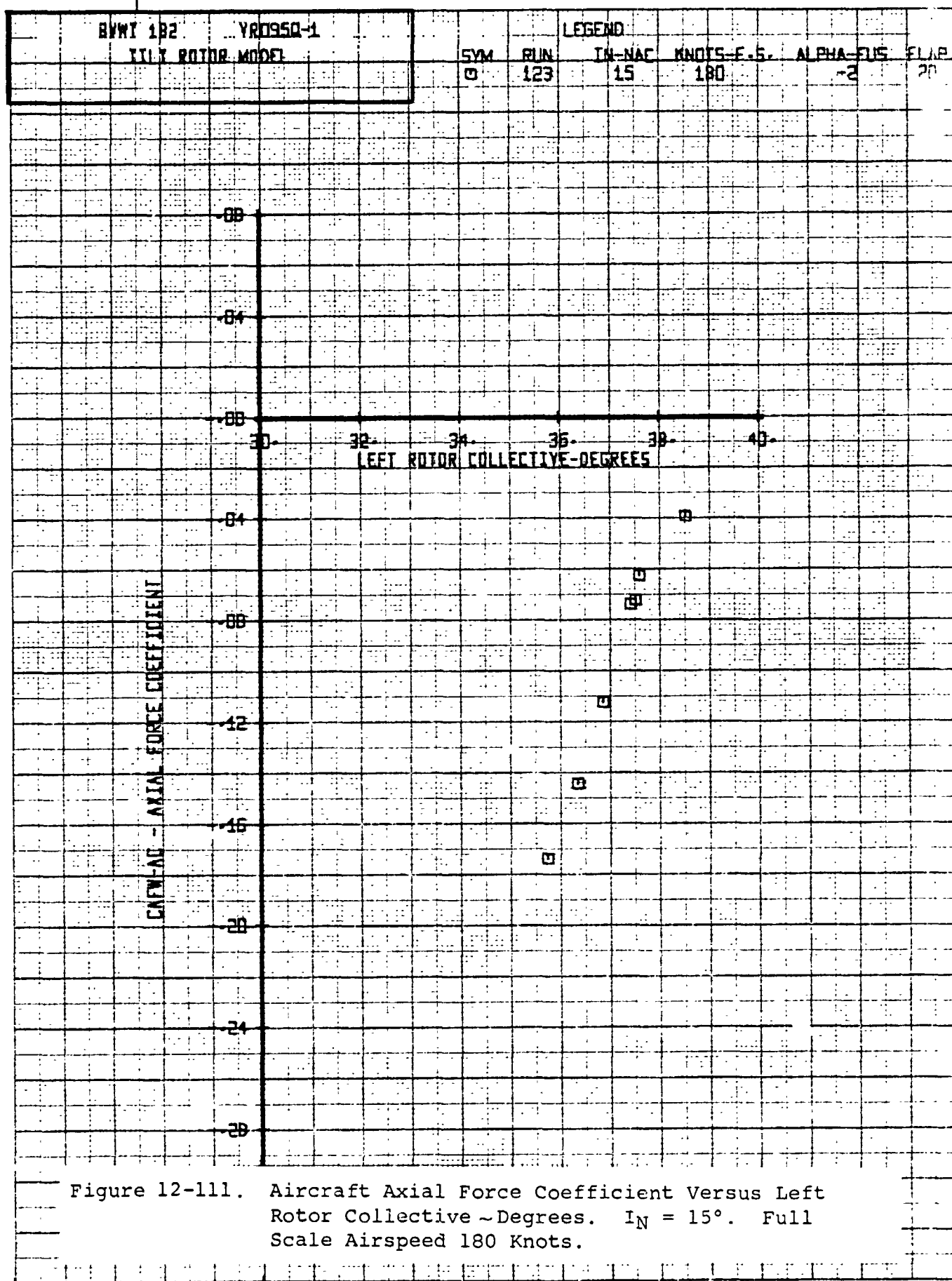


| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | YR0950-1 | LEGEND | | | | |
| 1117 ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-E.G. | ALPHA-FUS |
| | | □ | 123 | 15 | 180 | -2 |
| | | | | | | FLAP 20 |

Figure 12-109. Aircraft Lift Coefficient Versus Left Rotor Collective Degrees. $\sim I_N = 15^\circ$. Full Scale Airspeed 180 Knots.







BVWT 182 VR0950-1
TILT ROTOR MODEL

LEGEND
SYM RUN IN-NAC KNOTS-E.S. ALPHA-EUS FLAP
0 123 15 180 -2 20

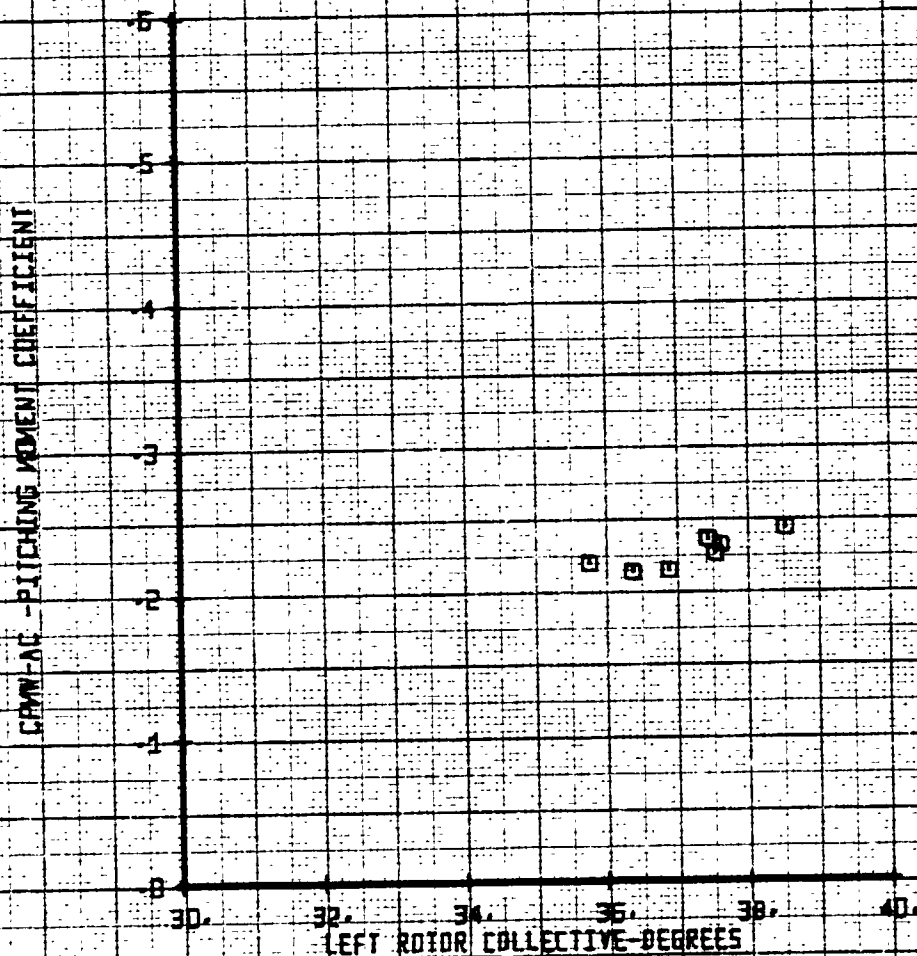


Figure 12-112. Aircraft Pitching Moment Coefficient Versus Left Rotor Collective ~Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

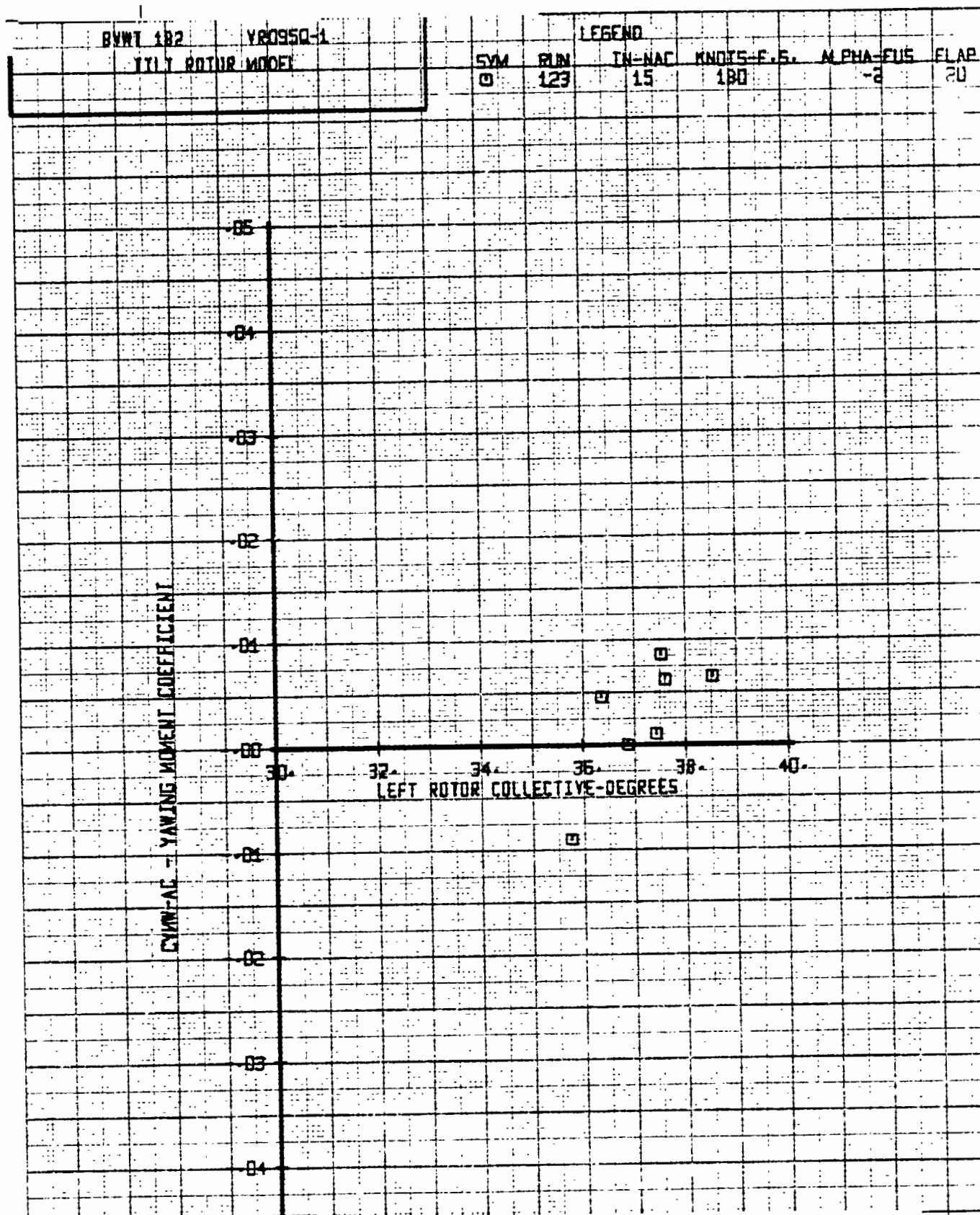


Figure 12-113. Aircraft Yawing Moment Coefficient Versus Left Rotor Collective ~Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

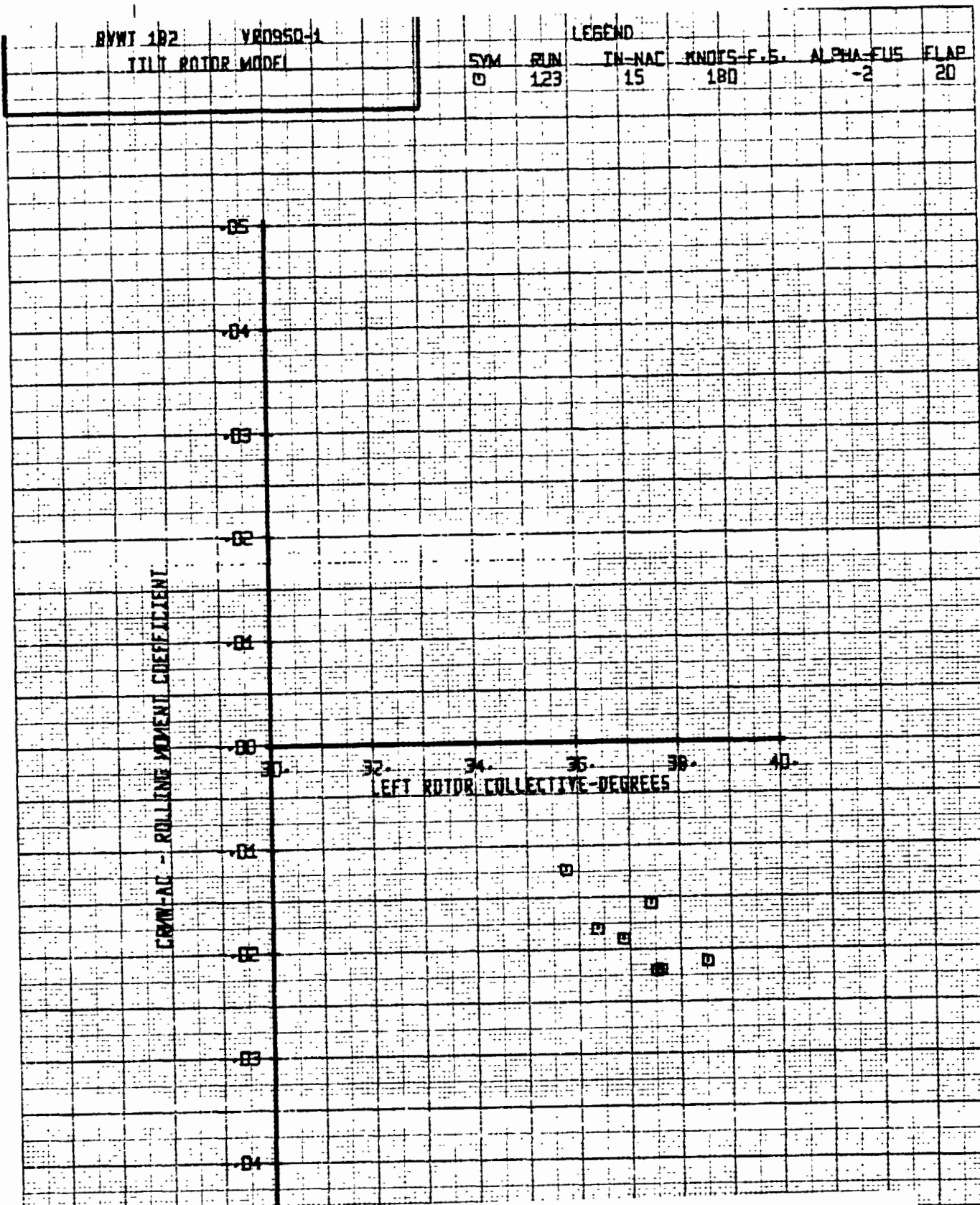
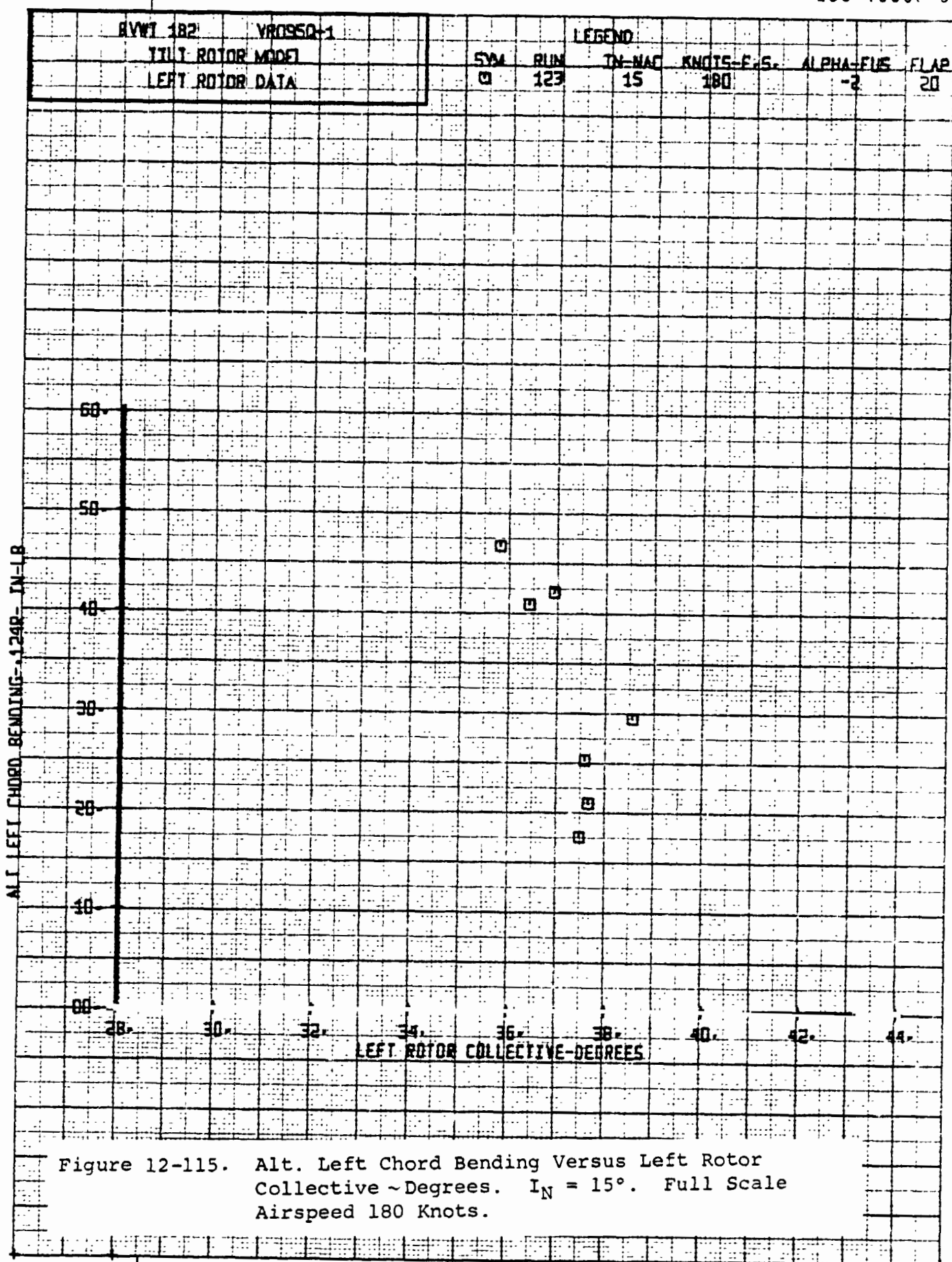
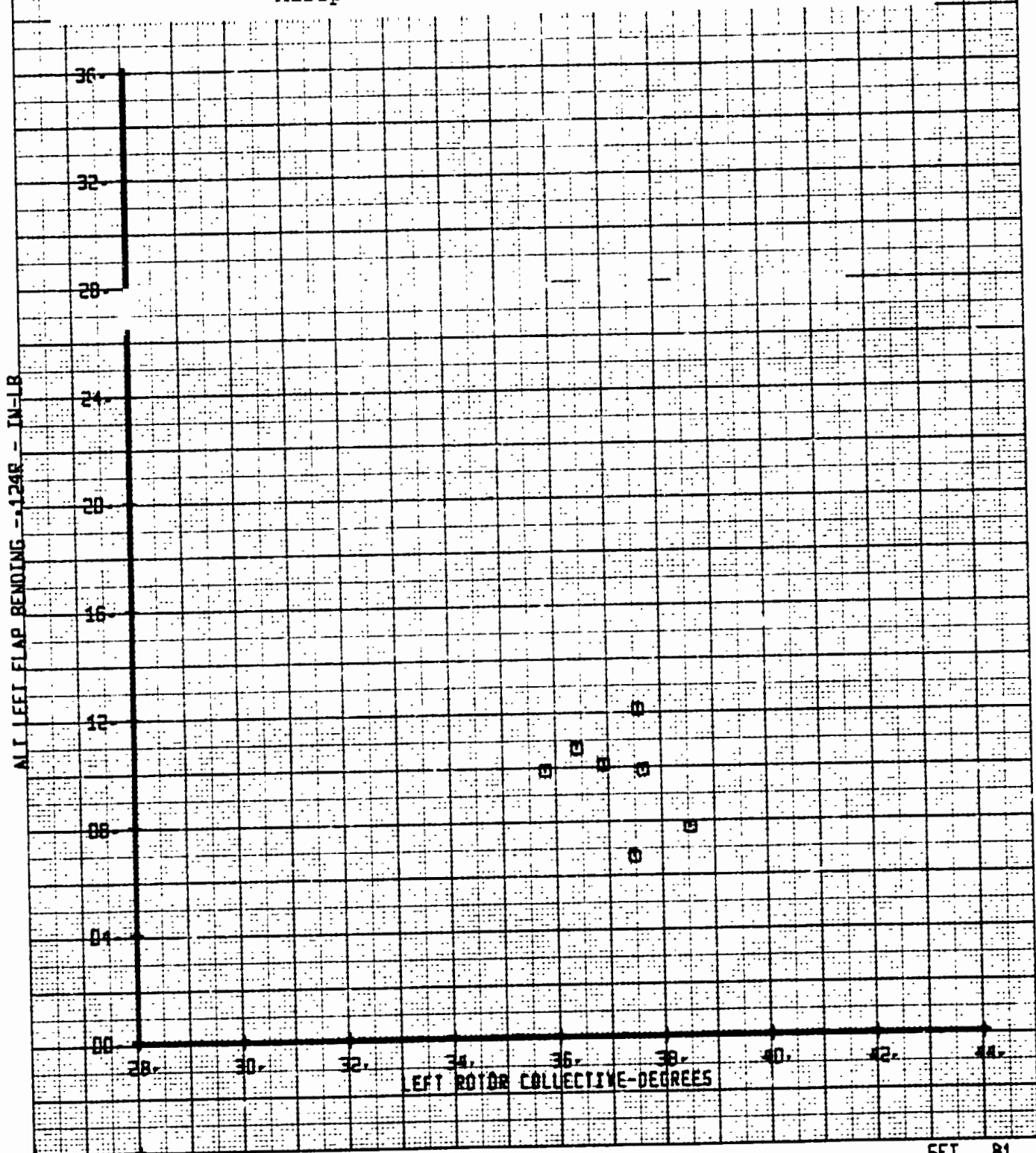


Figure 12-114. Aircraft Rolling Moment Coefficient Versus Left Rotor Collective ~ Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.



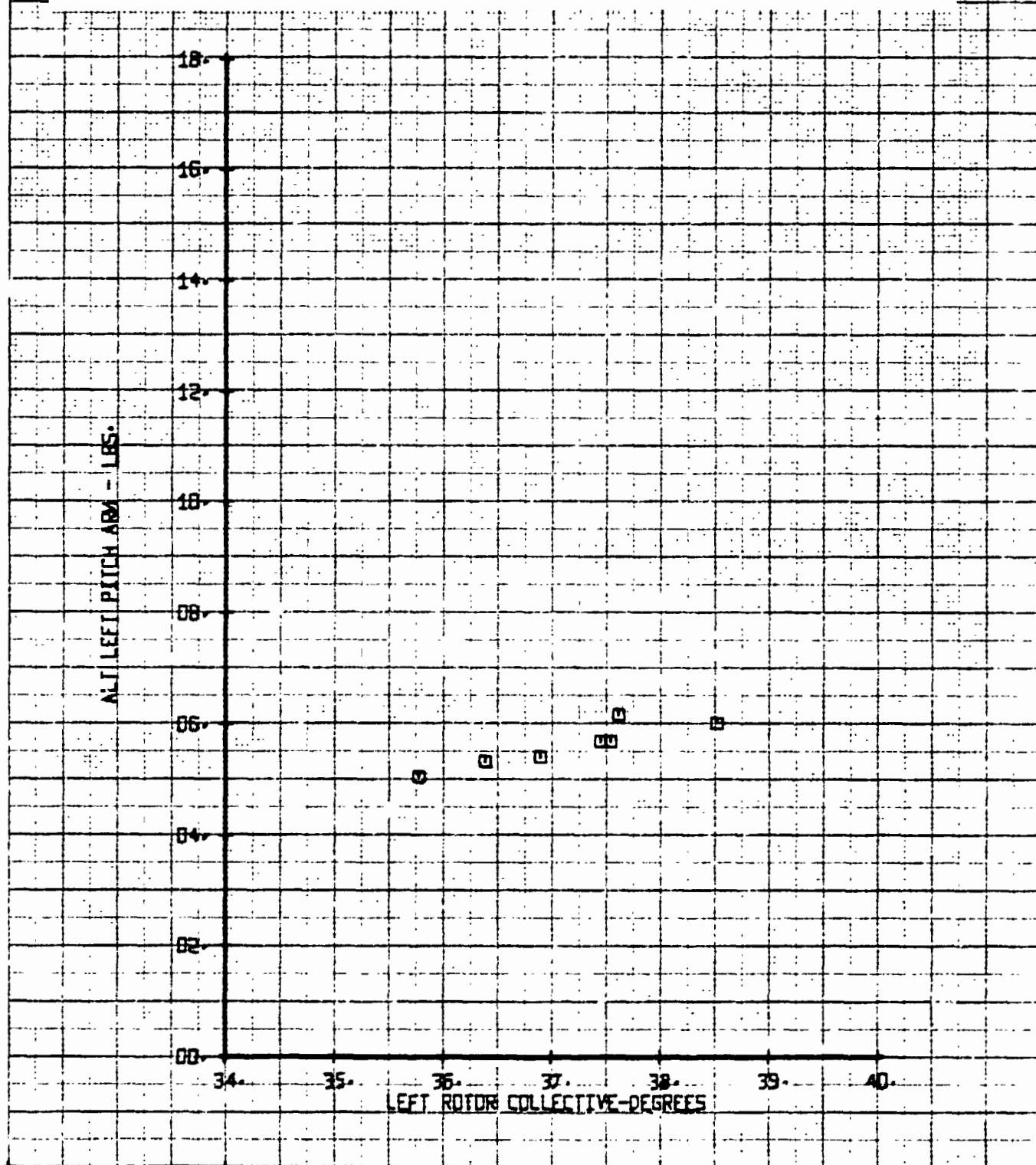
| | | | | | | |
|------------------|----------|--------|------|--------|------------|-----------|
| BVWT 182 | VR0950-1 | LEGEND | | | | |
| YILT ROTOR MODEL | | SYM | RIIN | IN-WAC | KNOTS-F.S. | ALPHA-FUS |
| LEFT ROTOR DATA | | □ | 123 | 15 | 180 | -2 |
| | | | | | | FLAP 20 |

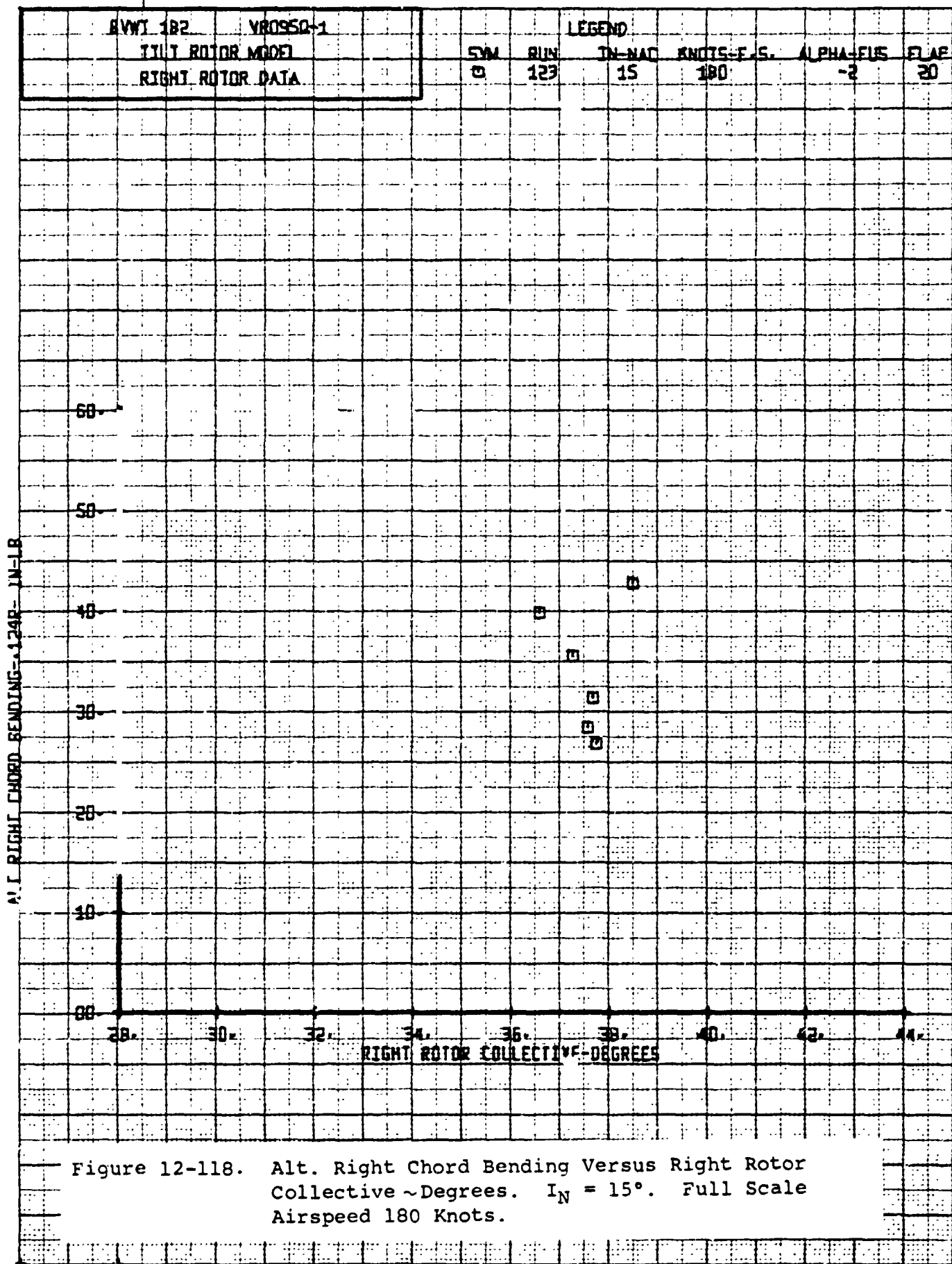
Figure 12-116. Alt. Left Flap Bending Versus Left Rotor Collective ~Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

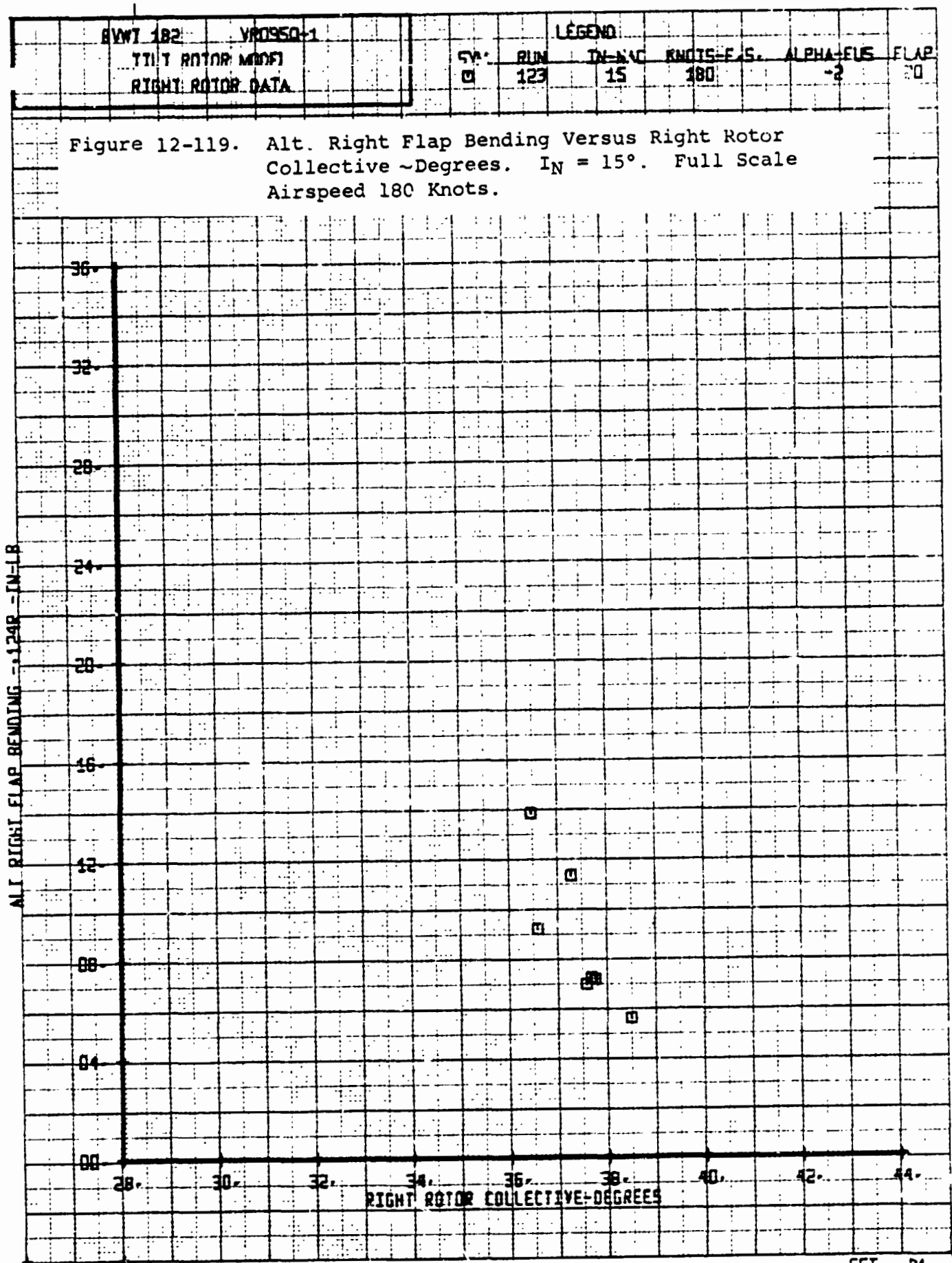


| | | | | | | |
|------------------|----------|--------|-----|--------|-----------|-----------|
| BWWT 182 | YR0950-1 | LEGEND | | | | |
| TILT ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-F-E | ALPHA-FUS |
| LEFT ROTOR DATA | | □ | 123 | 15 | 180 | -2 |
| | | | | | | FI AP |

Figure 12-117. Alt. Left Pitch Link Load Versus Left Rotor Collective ~Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

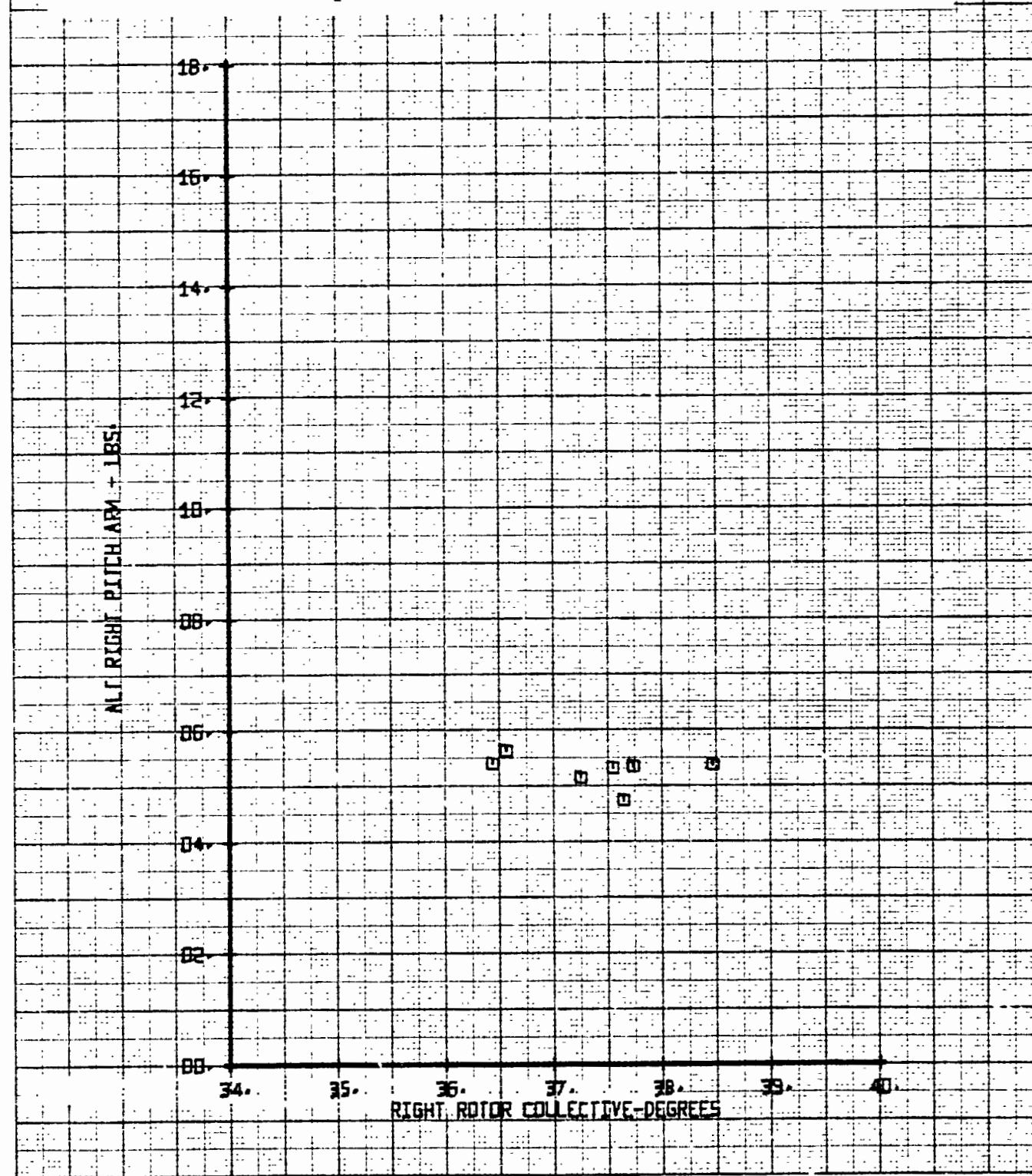


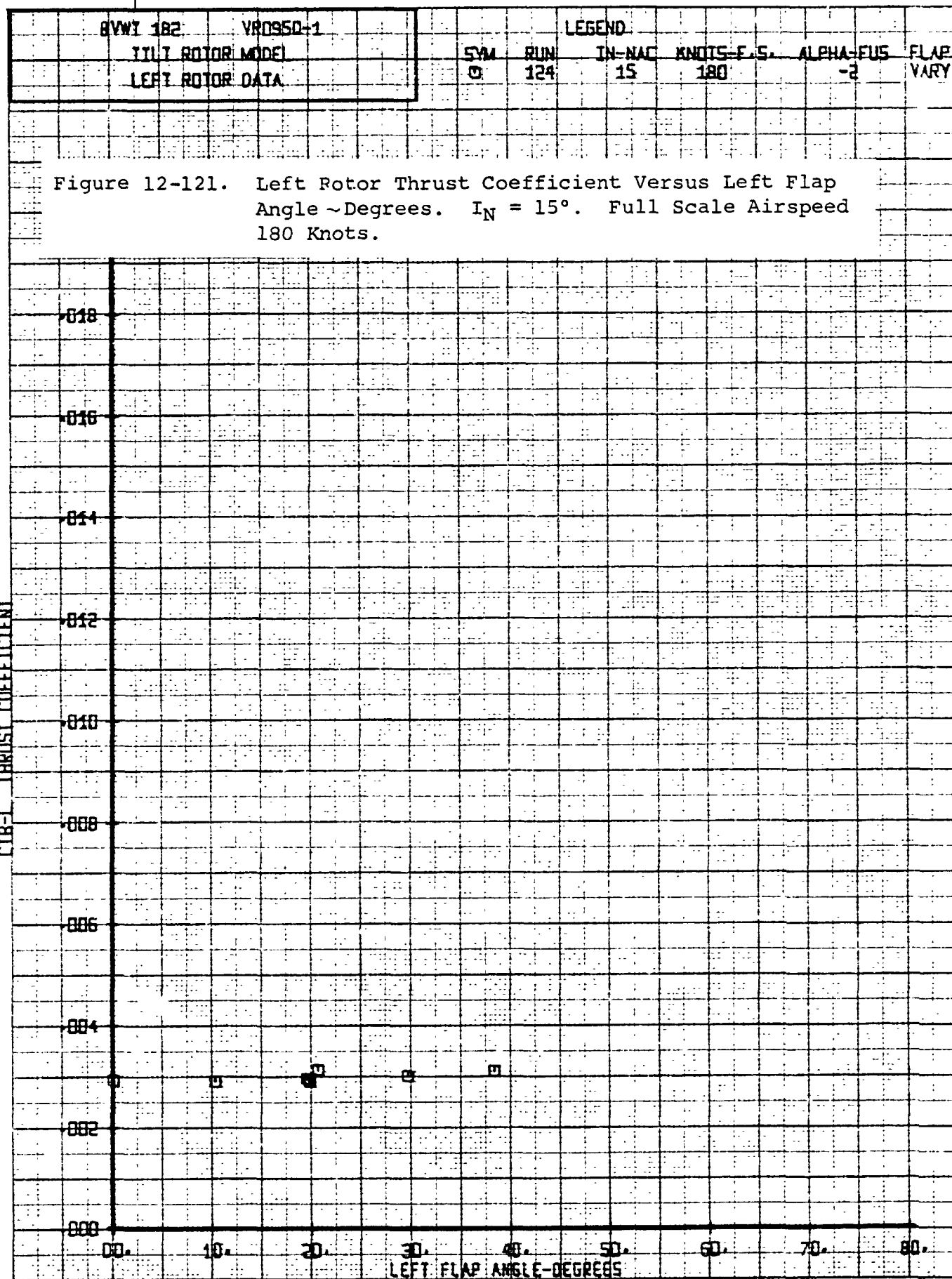


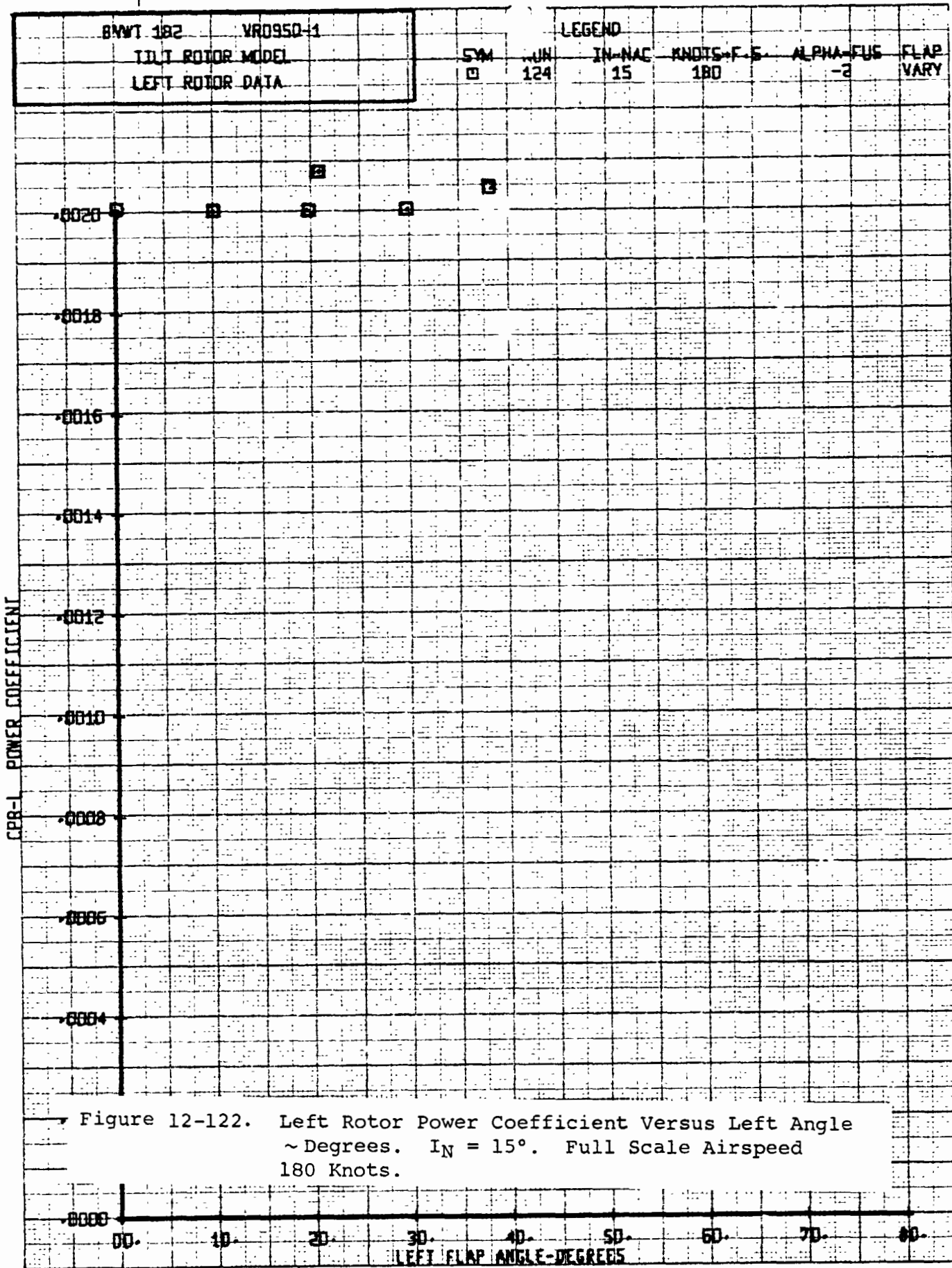


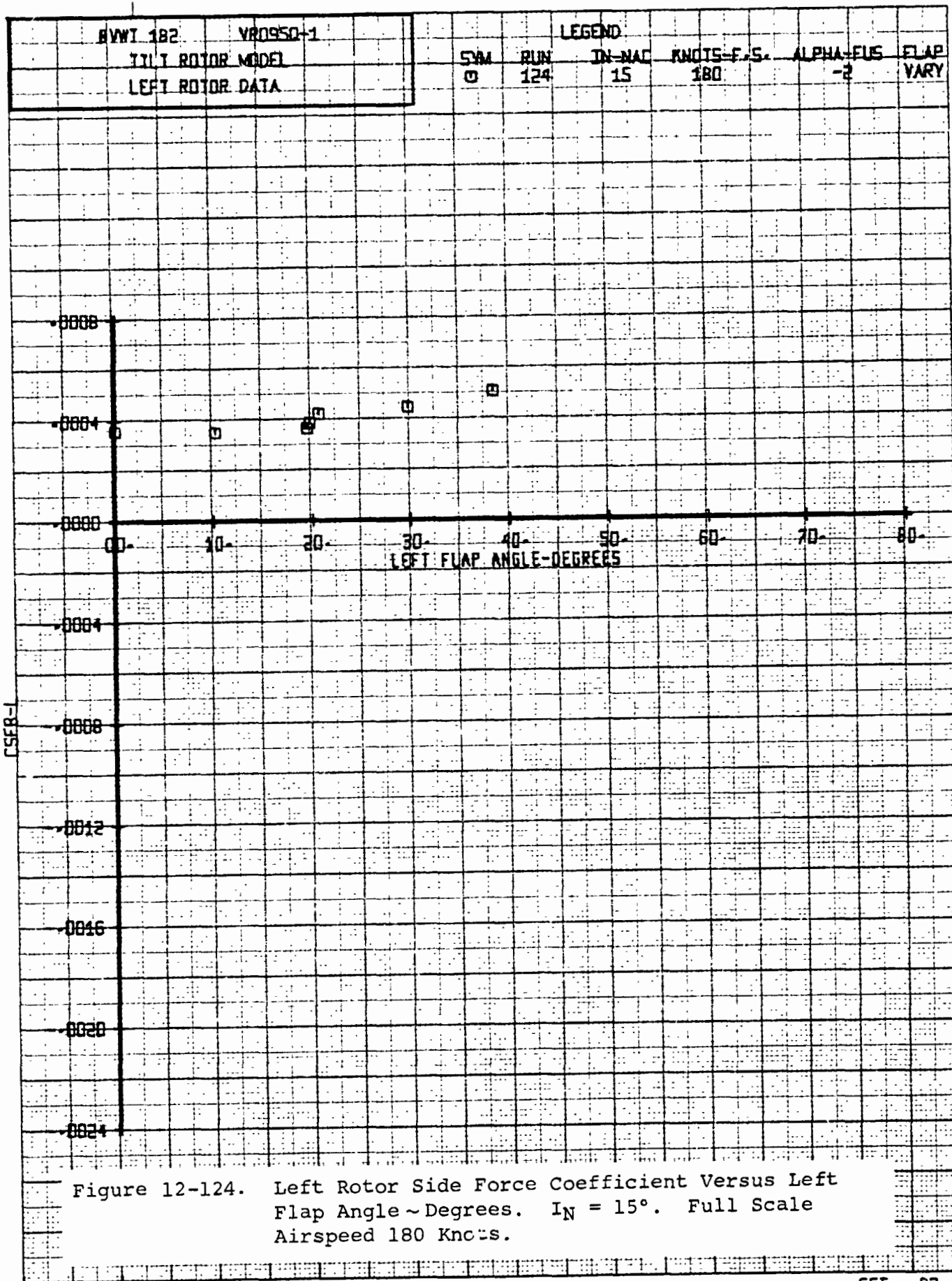
| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BYWT 182 | VR0950-1 | LEGEND | | | | |
| TILT ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FUS |
| RIGHT ROTOR DATA | | □ | 123 | 15 | 180 | -2 |
| | | | | | | FLAP 20 |

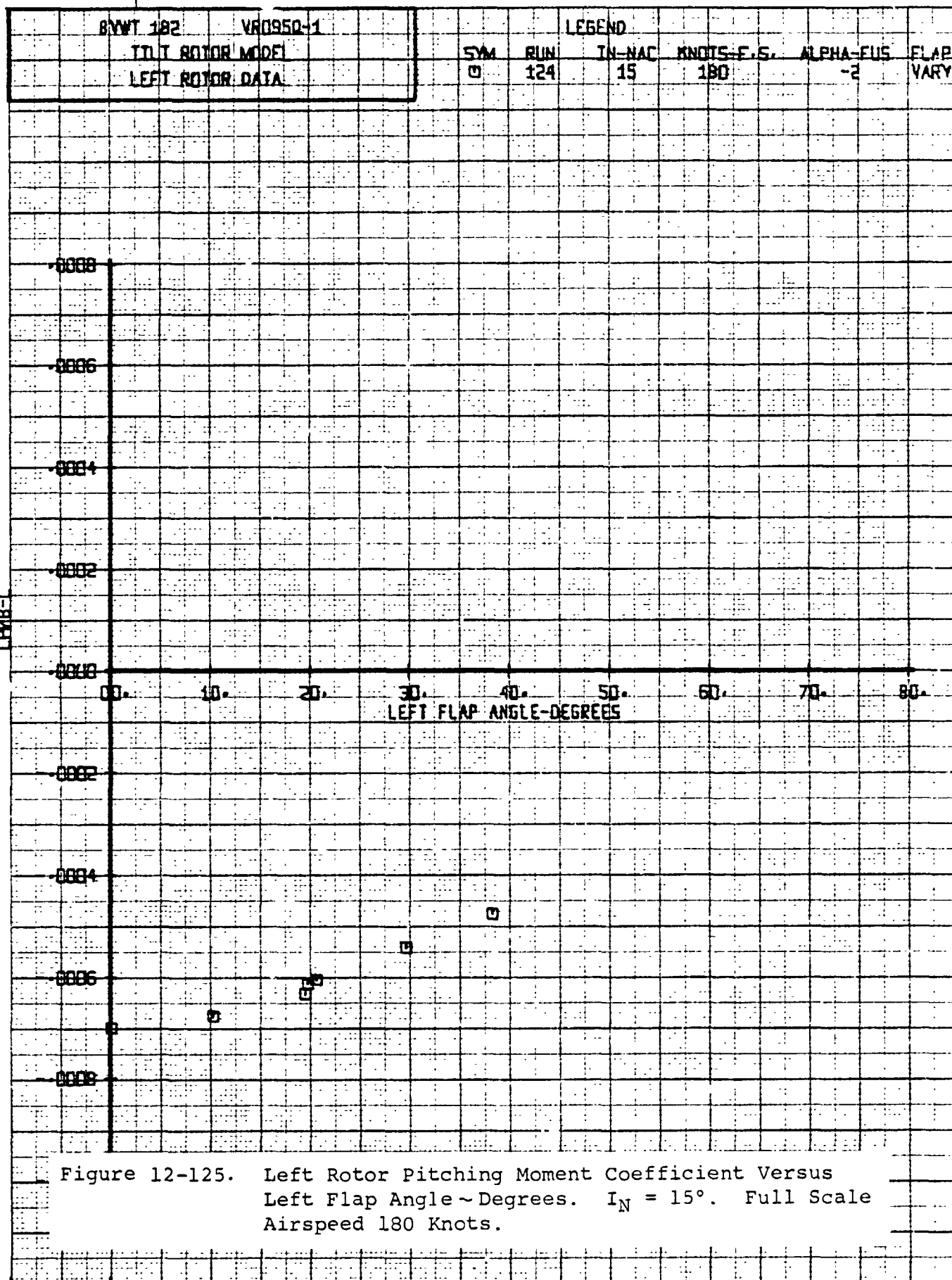
Figure 12-120. Alt. Right Pitch Link Load Versus Right Rotor Collective ~Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

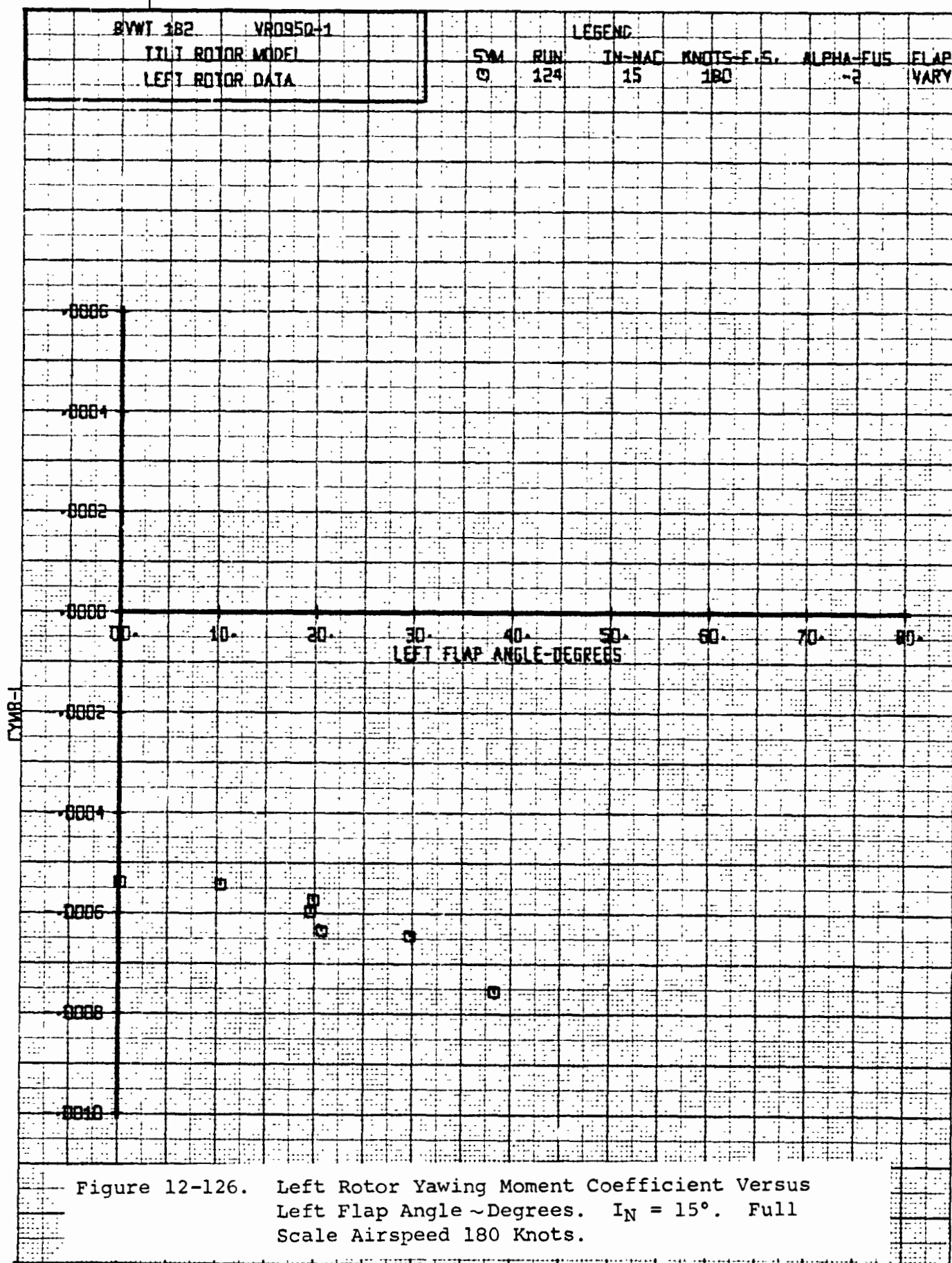






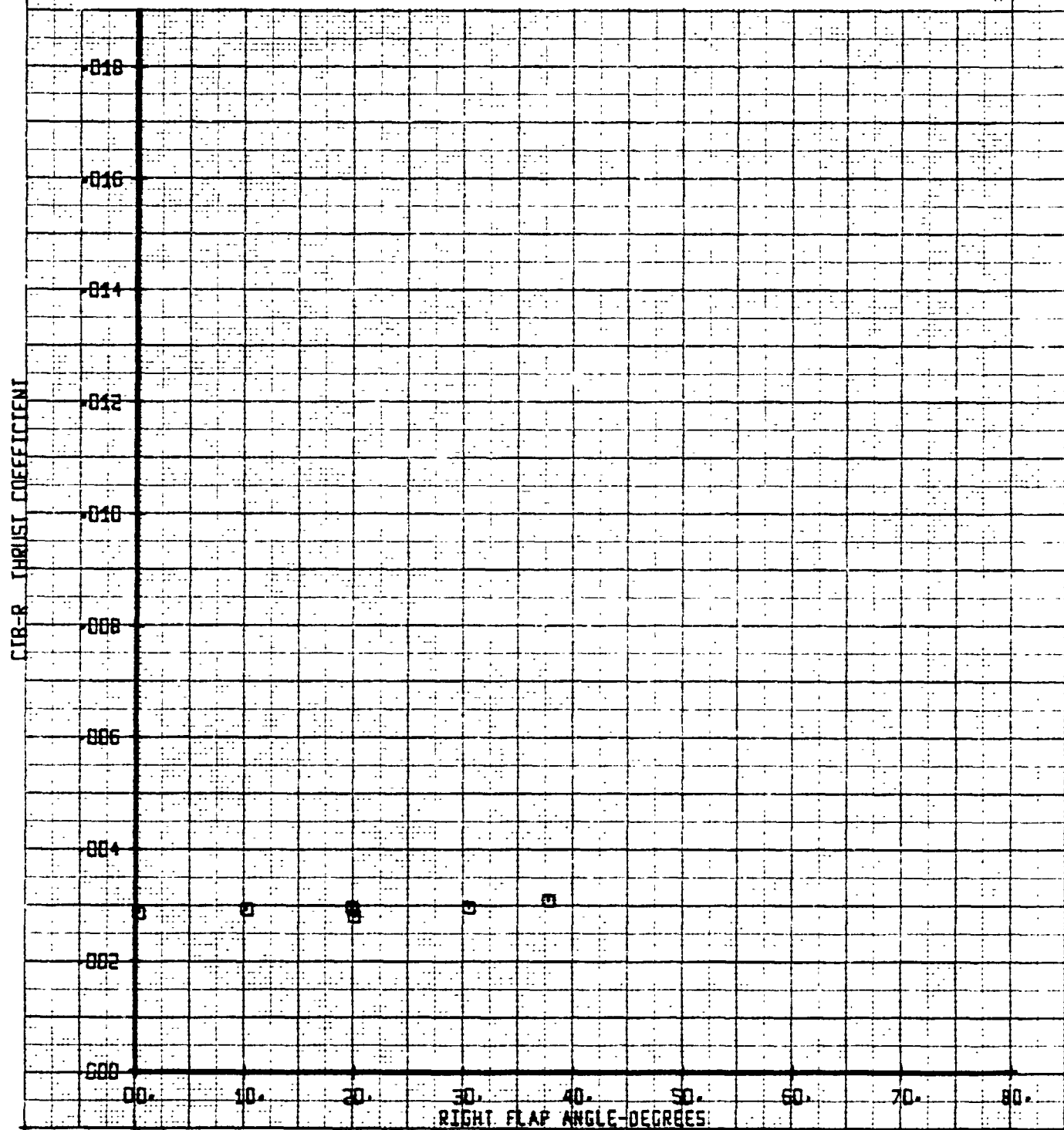






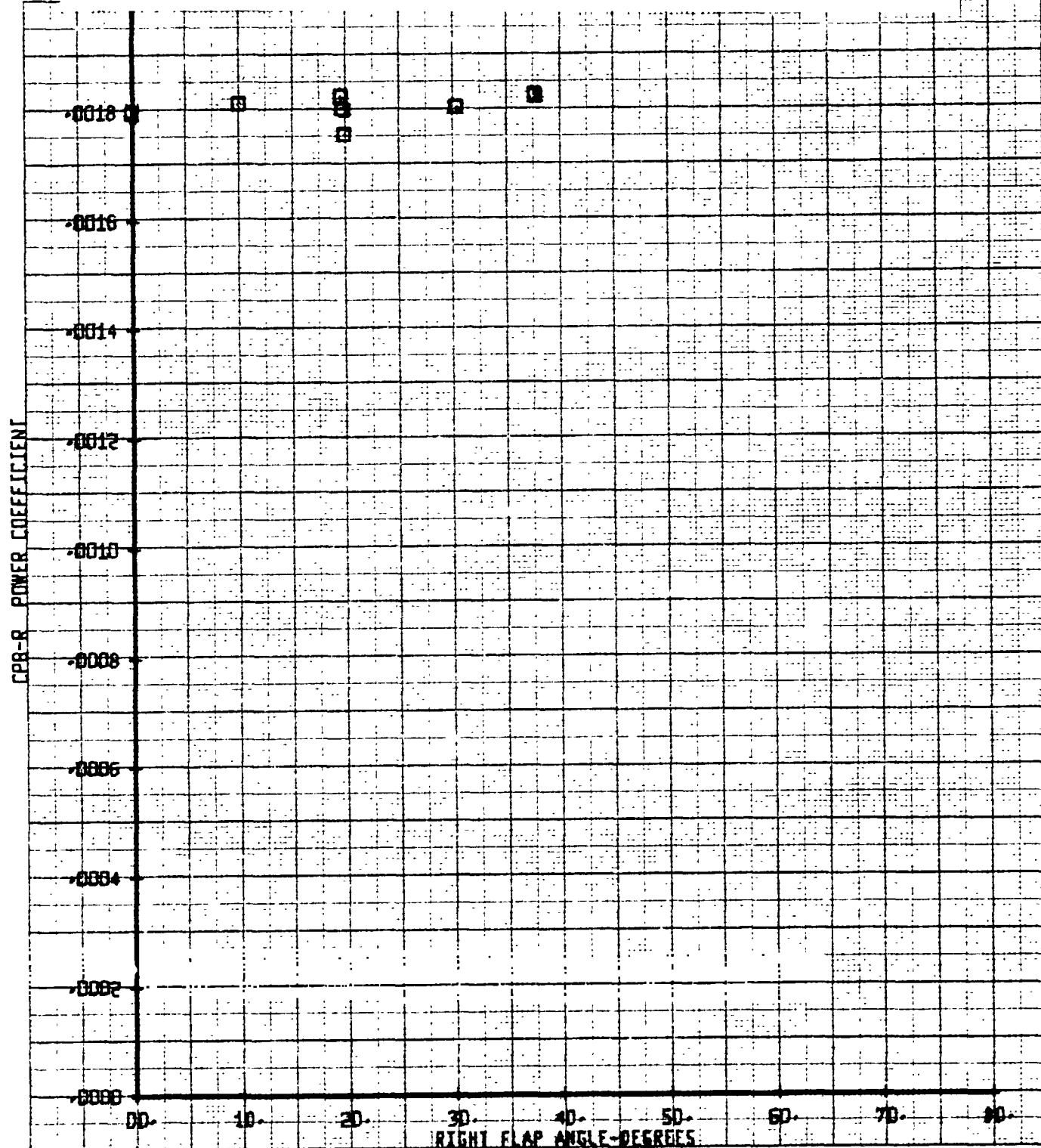
| | | | | | | |
|------------------|----------|-----------|-----|--------|------------|-----------|
| BVWT 182 | VR0950-1 | LEGEND | | | | |
| TILT ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FUS |
| RIGHT ROTOR DATA | | □ | 124 | 15 | 180 | -2 |
| | | FLAP VARY | | | | |

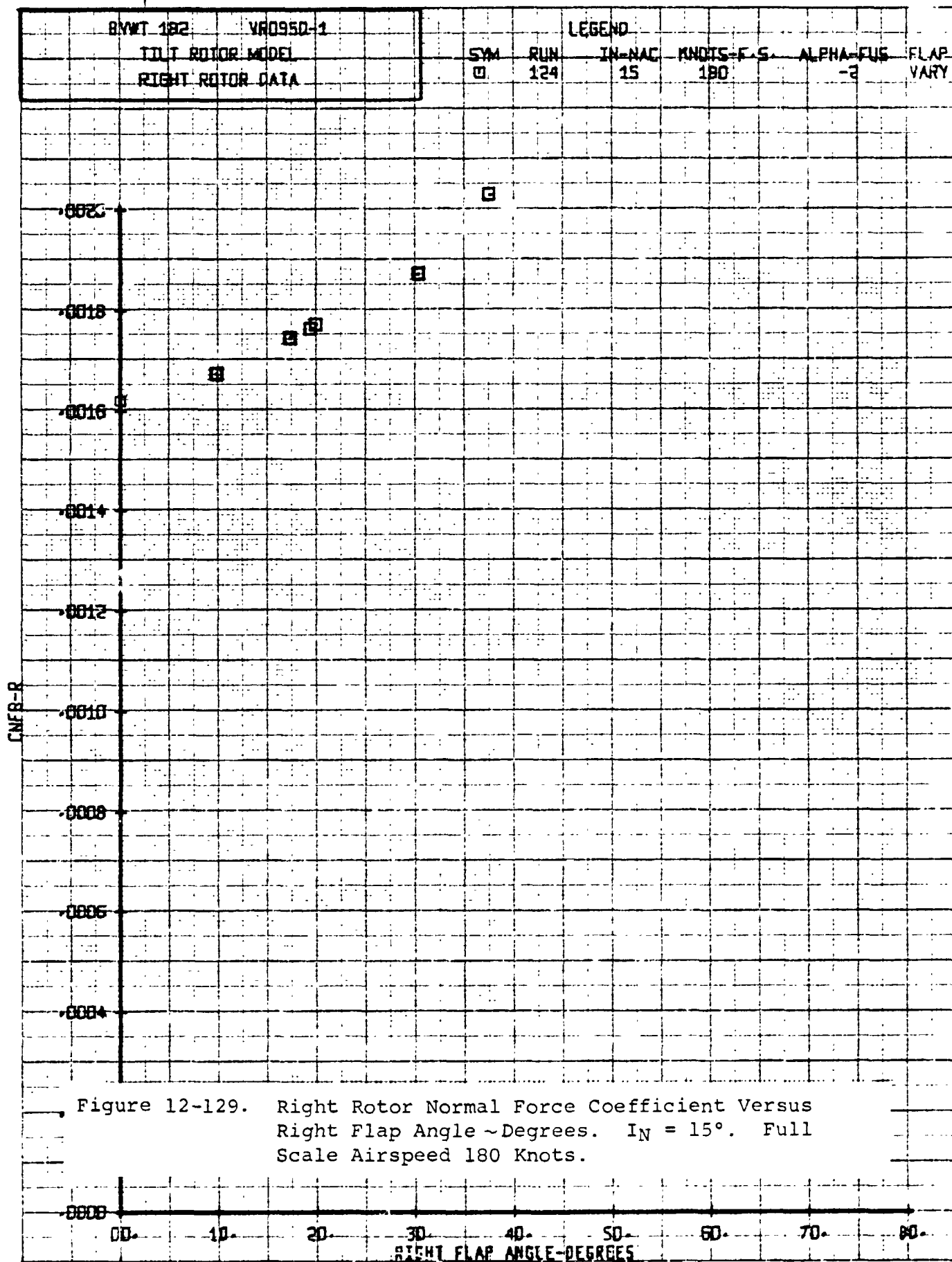
Figure 12-127. Right Rotor Thrust Coefficient Versus Right Flap Angle ~Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

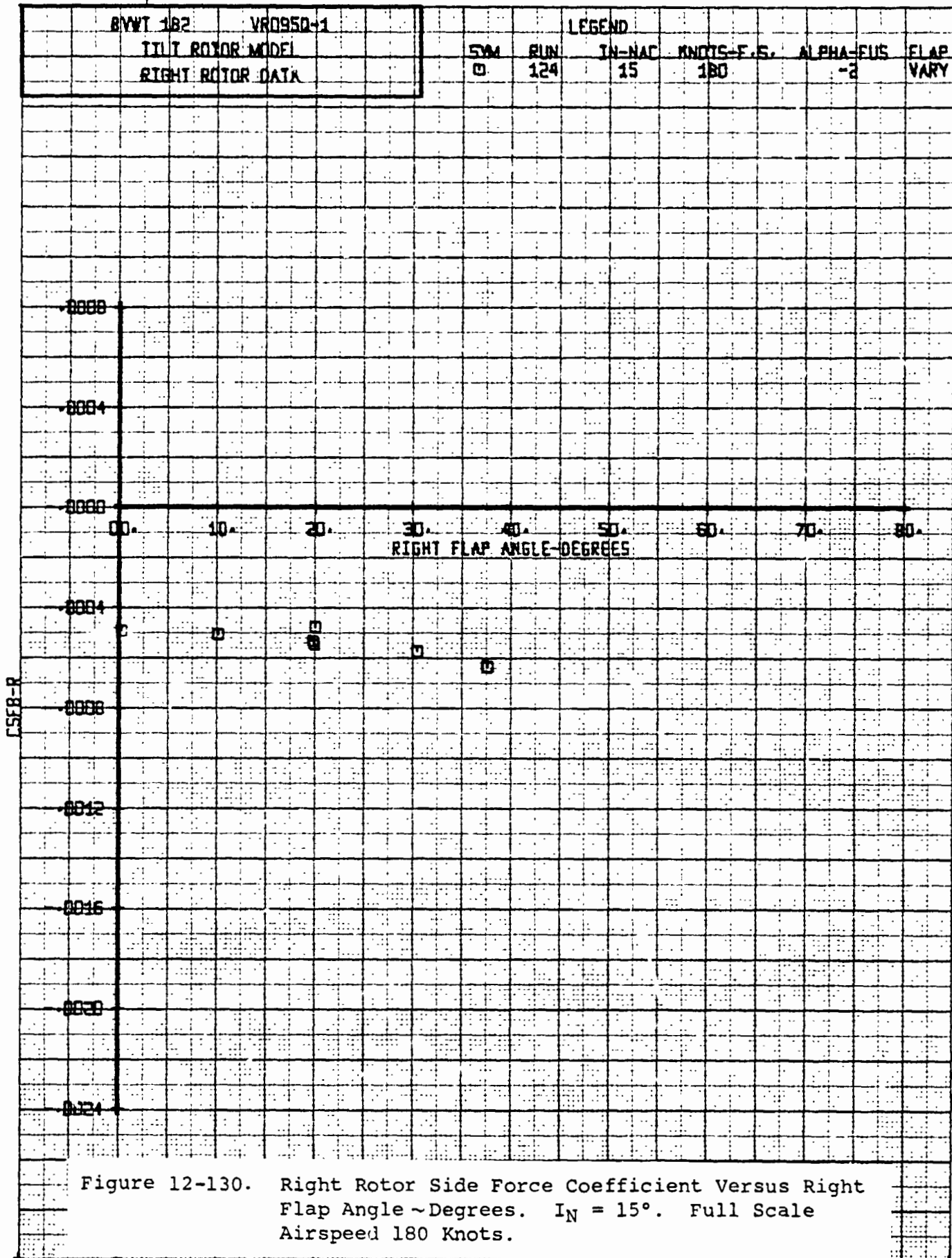


| | | | | | | |
|------------------|----------|--------|-----|--------|-----------|-----------|
| BVWT 182 | VR0950-1 | LEGEND | | | | |
| TILT ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-F-S | ALPHA-FUS |
| RIGHT ROTOR DATA | | □ | 124 | 15 | 180 | -2 |
| | | | | | | FLAP VARY |

Figure 12-128. Right Rotor Power Coefficient Versus Right Flap Angle ~Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.







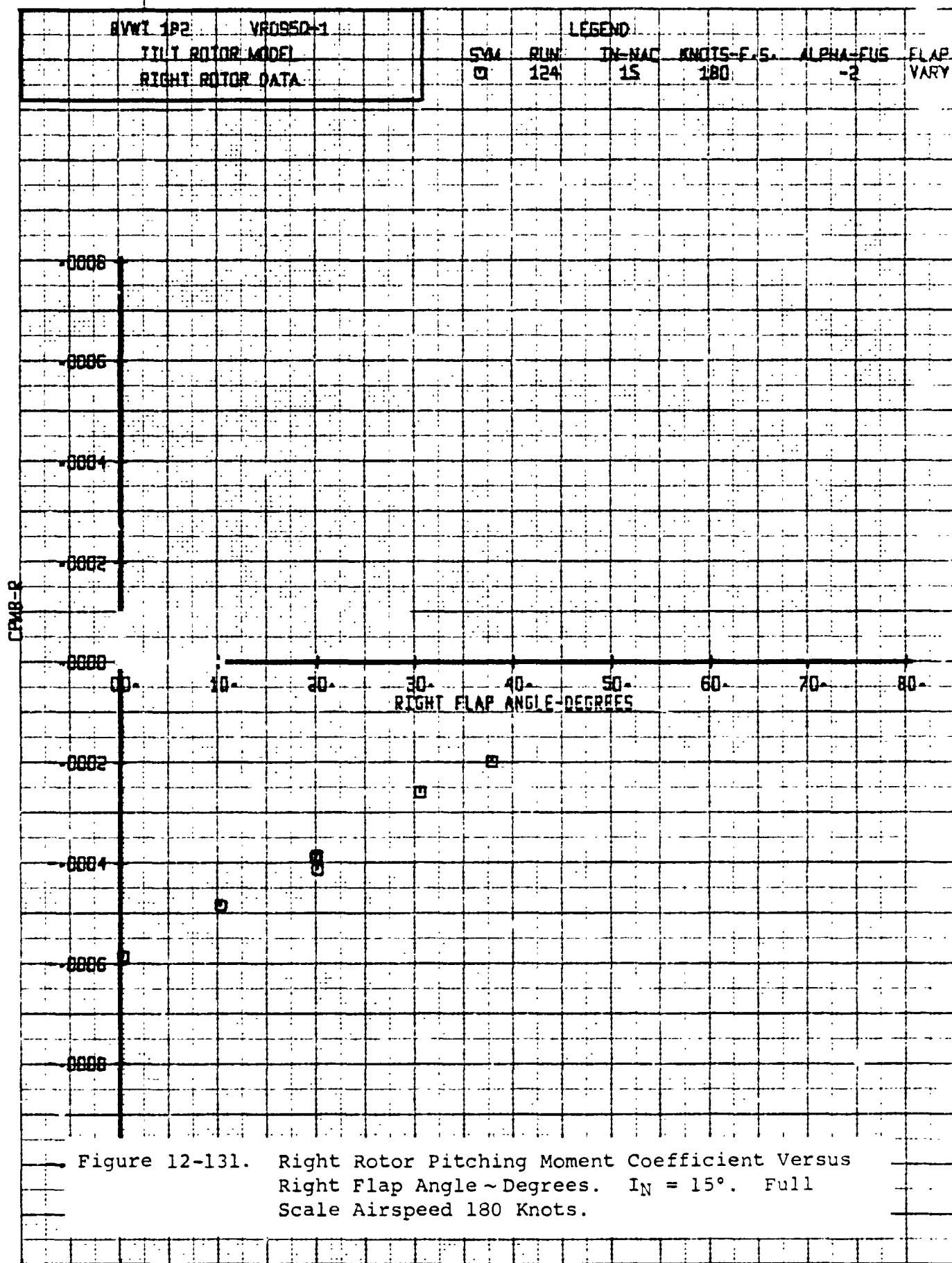


Figure 12-131. Right Rotor Pitching Moment Coefficient Versus Right Flap Angle ~ Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

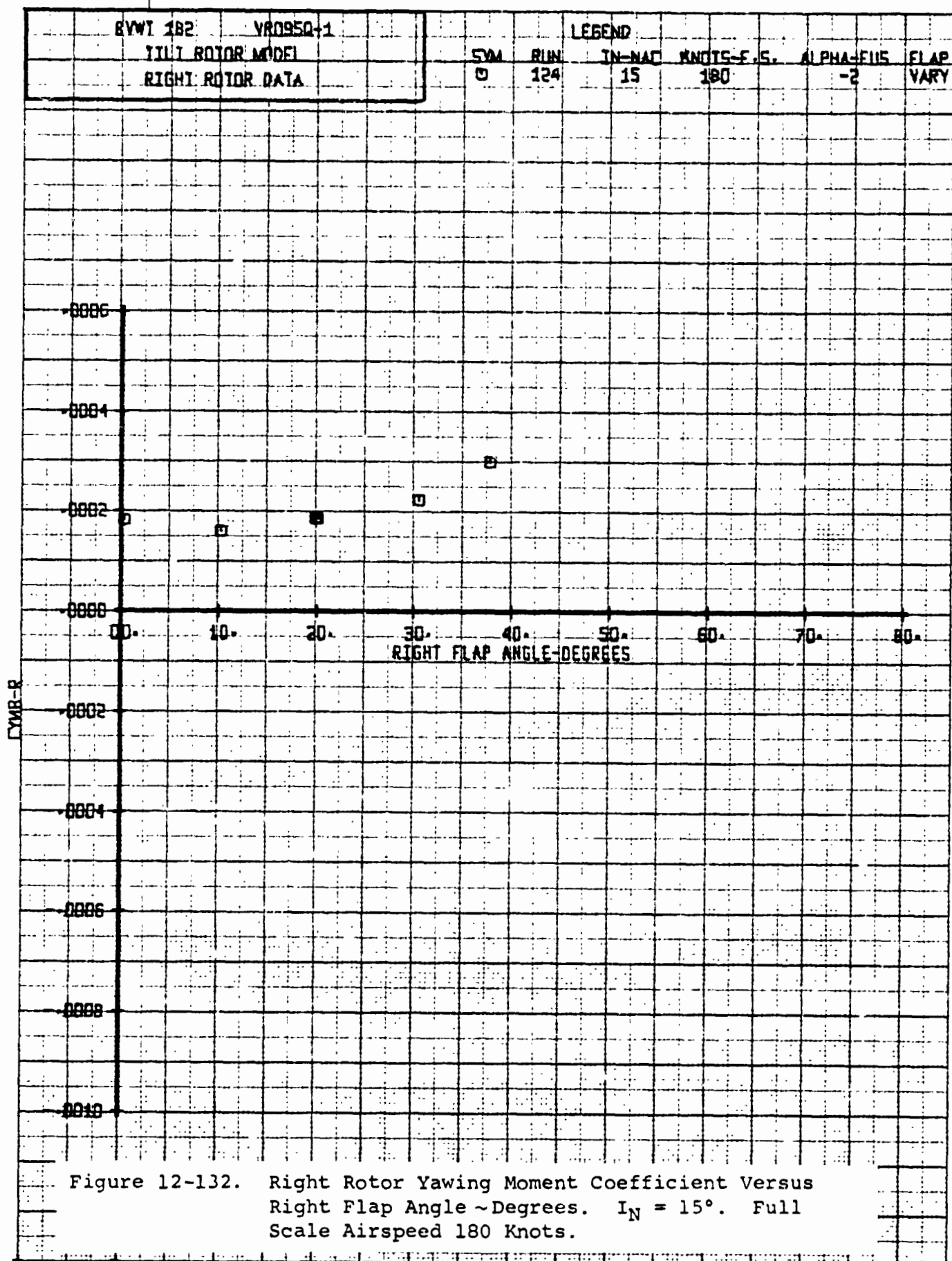
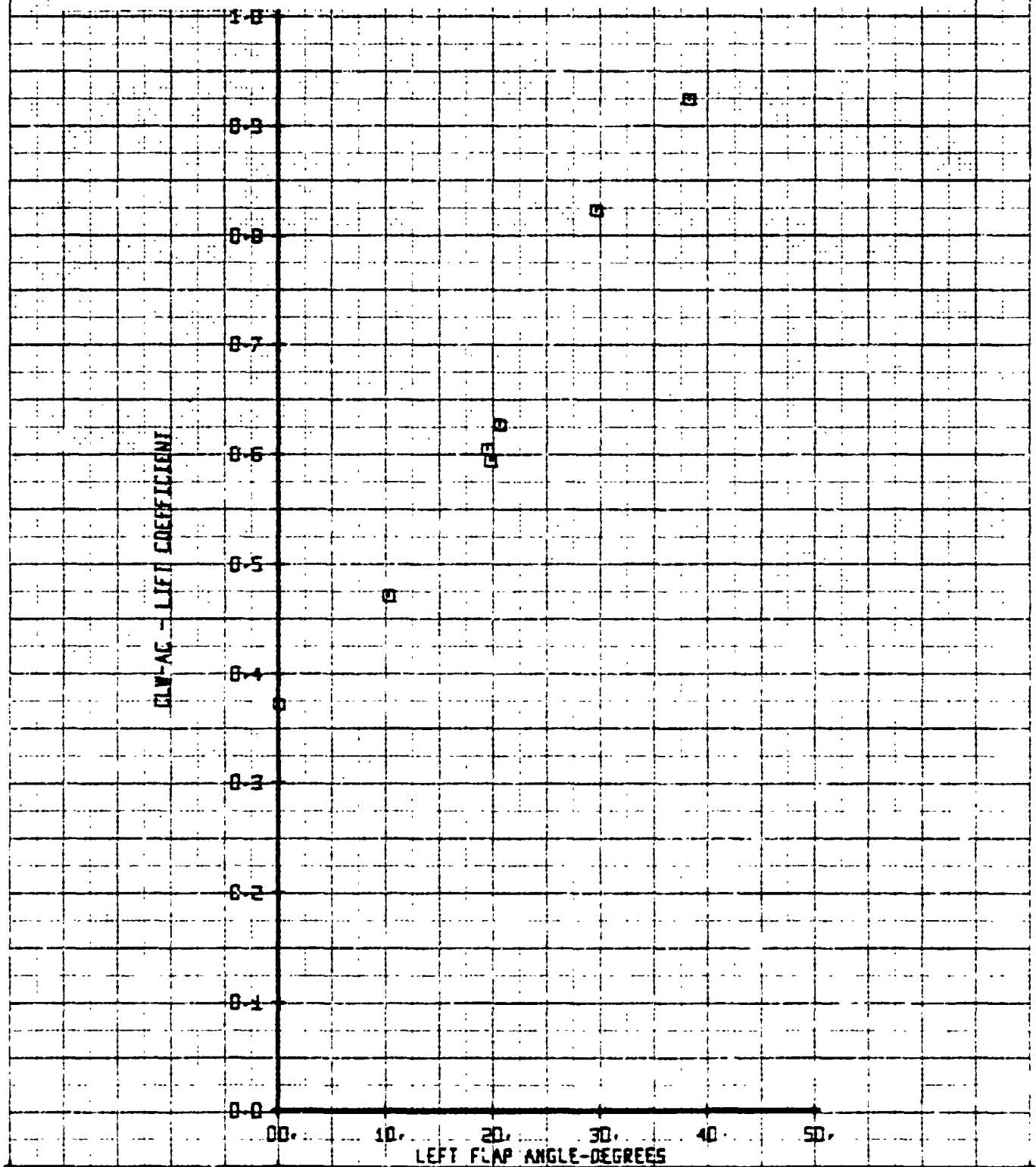


Figure 12-132. Right Rotor Yawing Moment Coefficient Versus Right Flap Angle ~Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BYWT 182 | YR0950-1 | LEGEND | | | | |
| TILT ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS=F.S. | ALPHA-FUS |
| | | □ | 124 | 15 | 180 | -2 |
| | | | | | | FLAP VARY |

Figure 12-133. Aircraft Lift Coefficient Versus Left Flap Angle ~ Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.



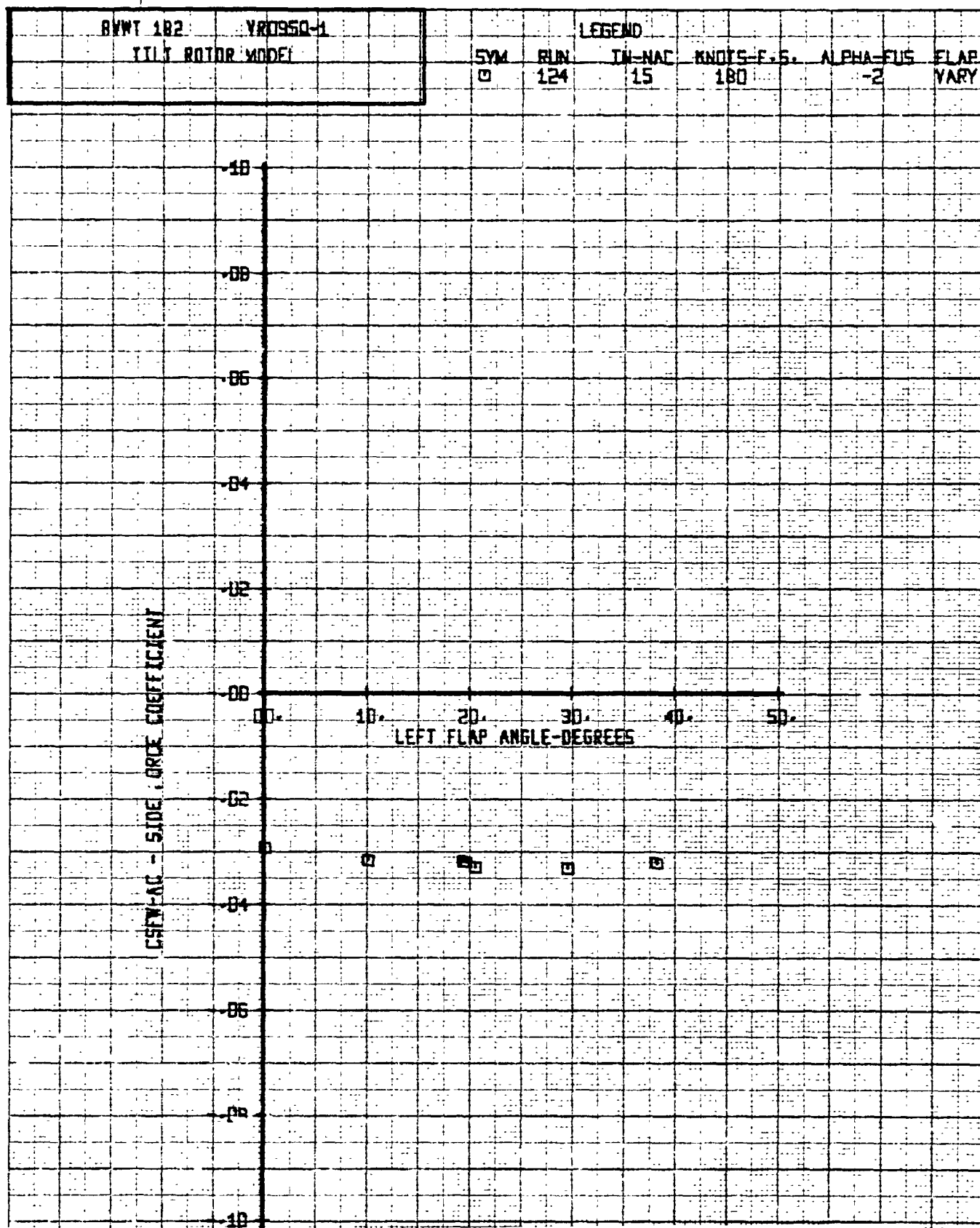


Figure 12-134. Aircraft Side Force Coefficient Versus Left Flap Angle ~degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

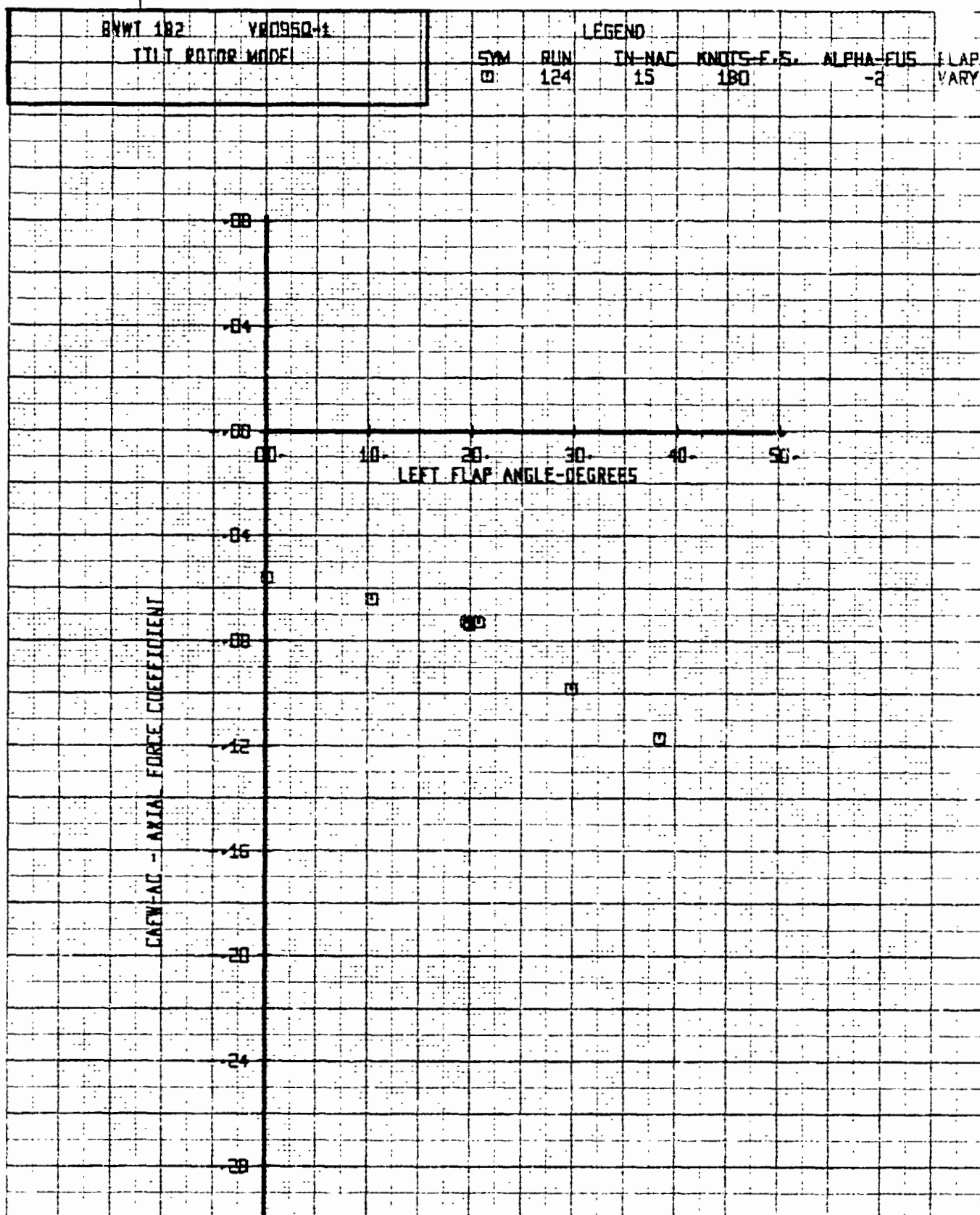


Figure 12-135. Aircraft Axial Force Coefficient Versus Left Flap Angle ~Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

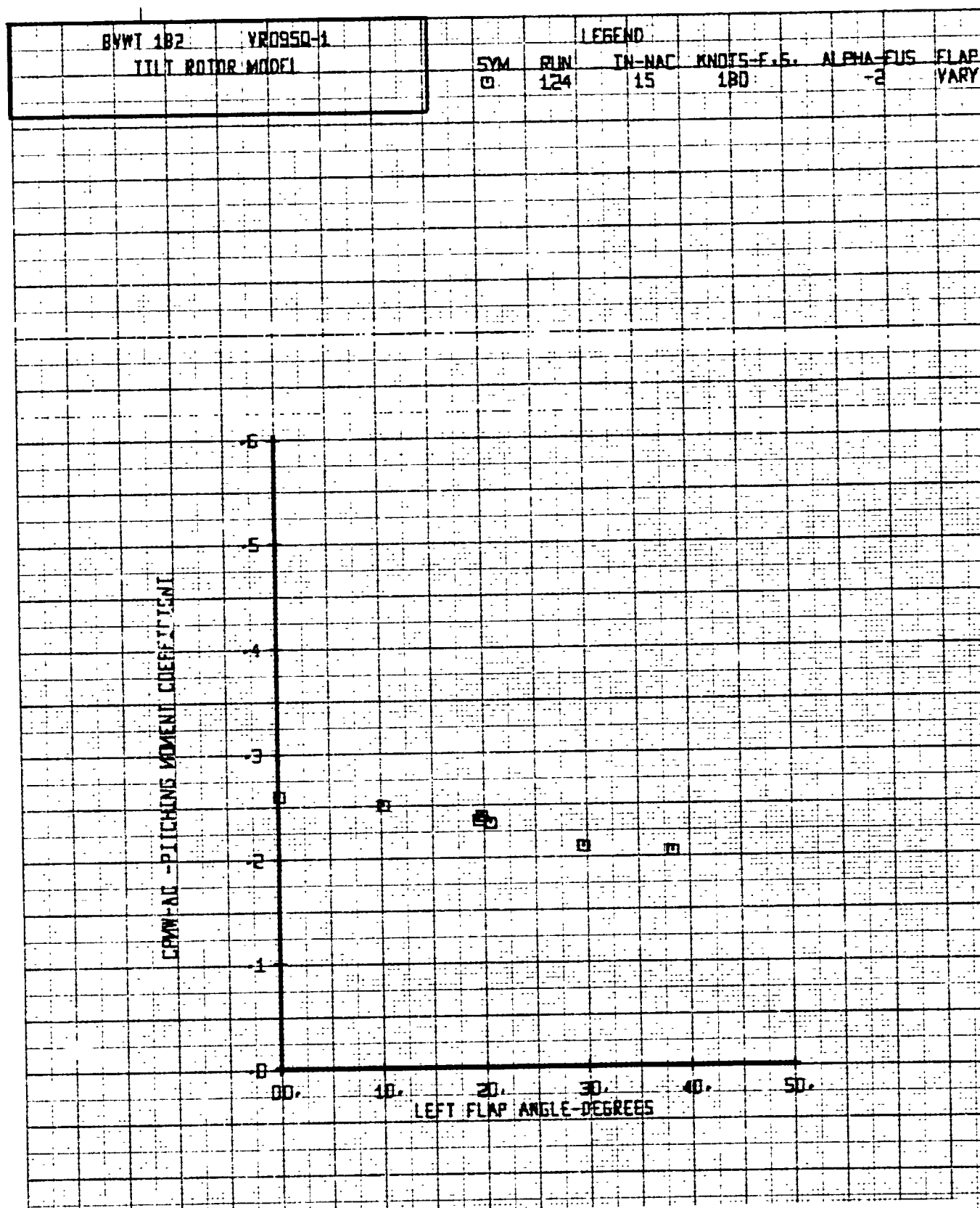


Figure 12-136. Aircraft Pitching Moment Coefficient Versus Left Flap Angle ~Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

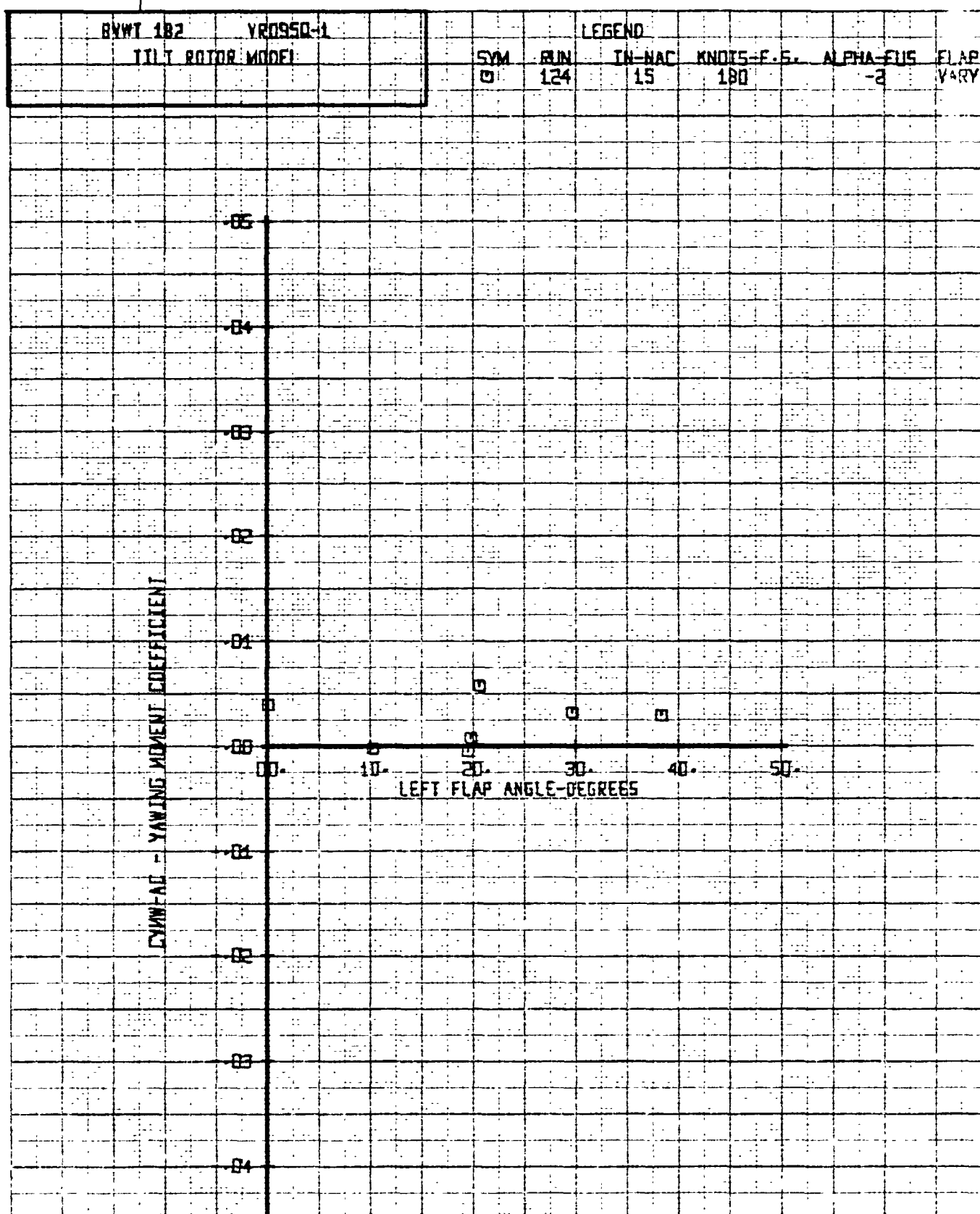
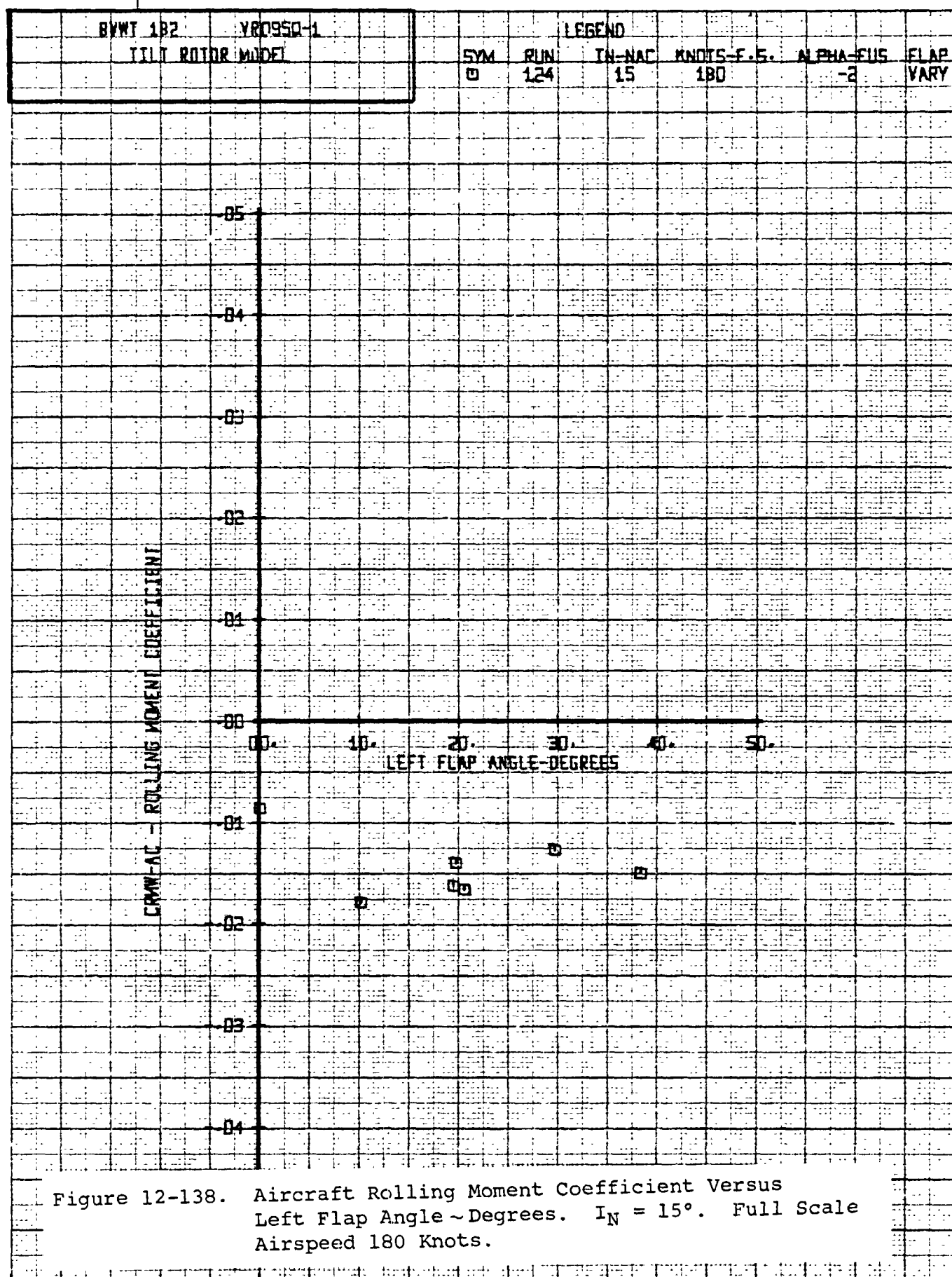


Figure 12-137. Aircraft Yawing Moment Coefficient Versus Left Flap Angle ~ Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.



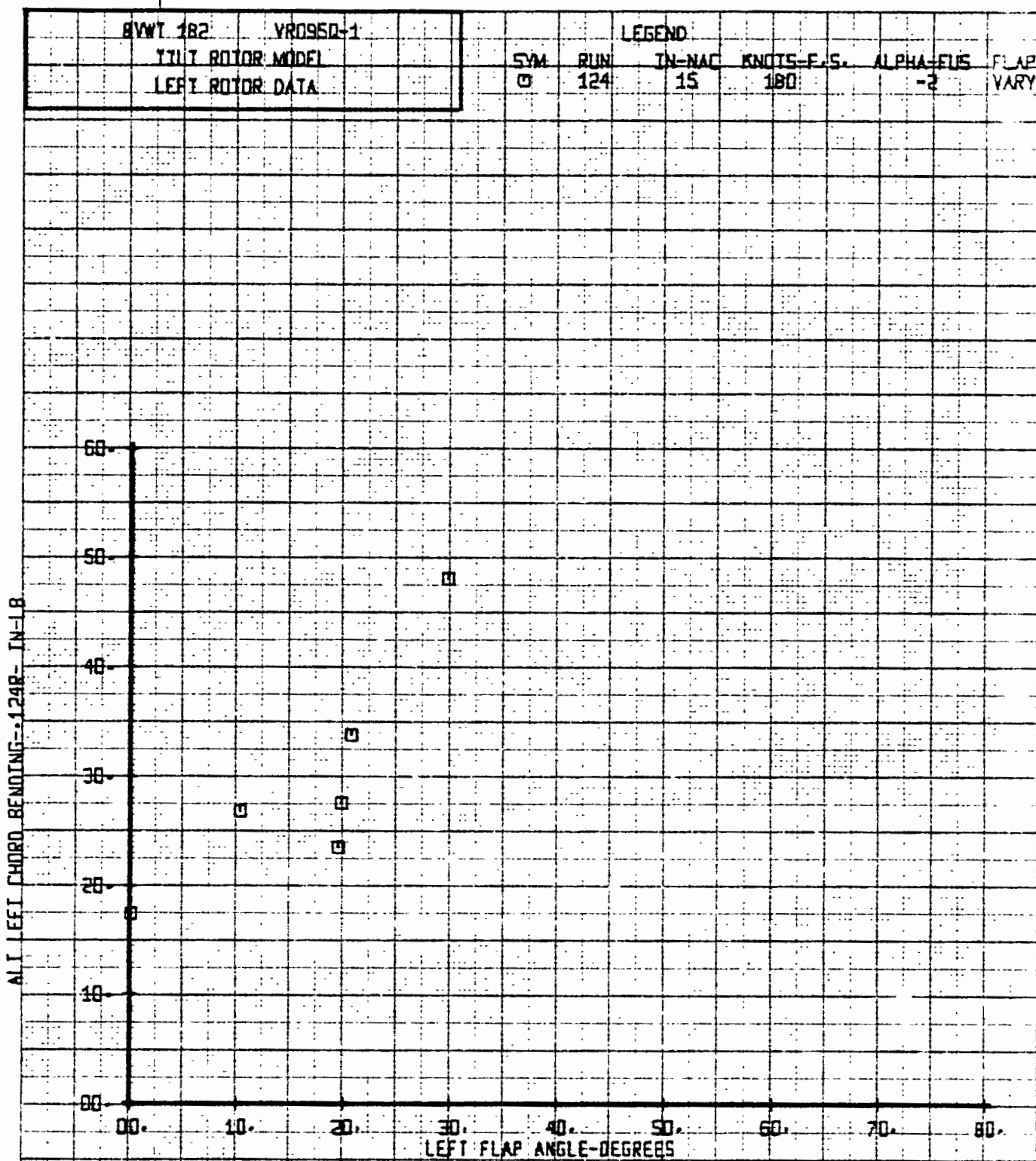


Figure 12-139. Alt. Left Chord Bending Versus Left Flap Angle
~ Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180
Knots.

BVWT 182 VRO950-1

LEFT ROTOR MODEL

LEFT ROTOR DATA

LEGEND

SYM

RUN

IN-NAC

KNOTS-F.S.

ALPHA-FUS

FLAP

□

124

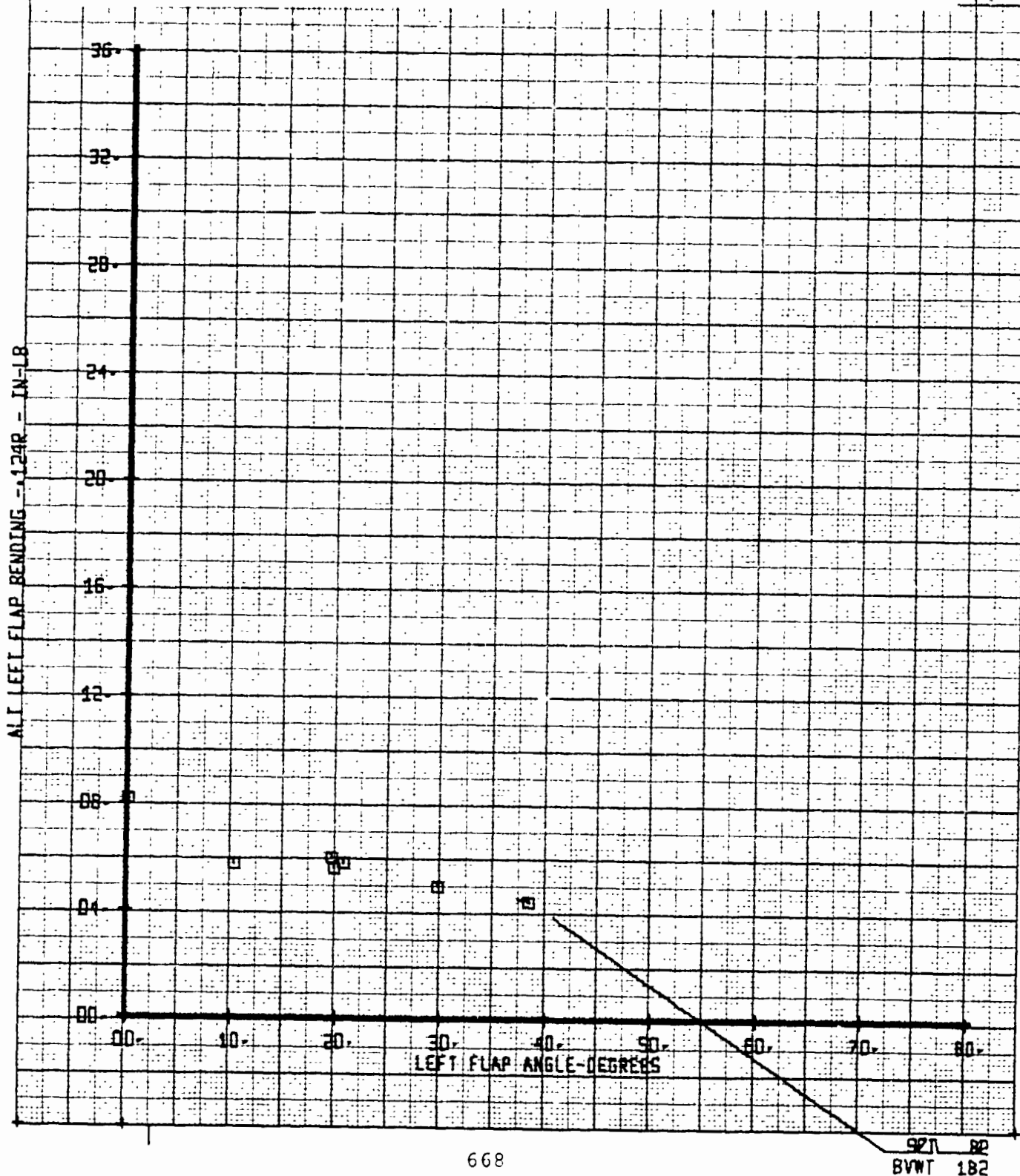
15

180

-2

VARY

Figure 12-140. Alt. Left Flap Bending Versus Left Flap Angle
 ~ Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180
 Knots.



BVWT 182 YB0950-1

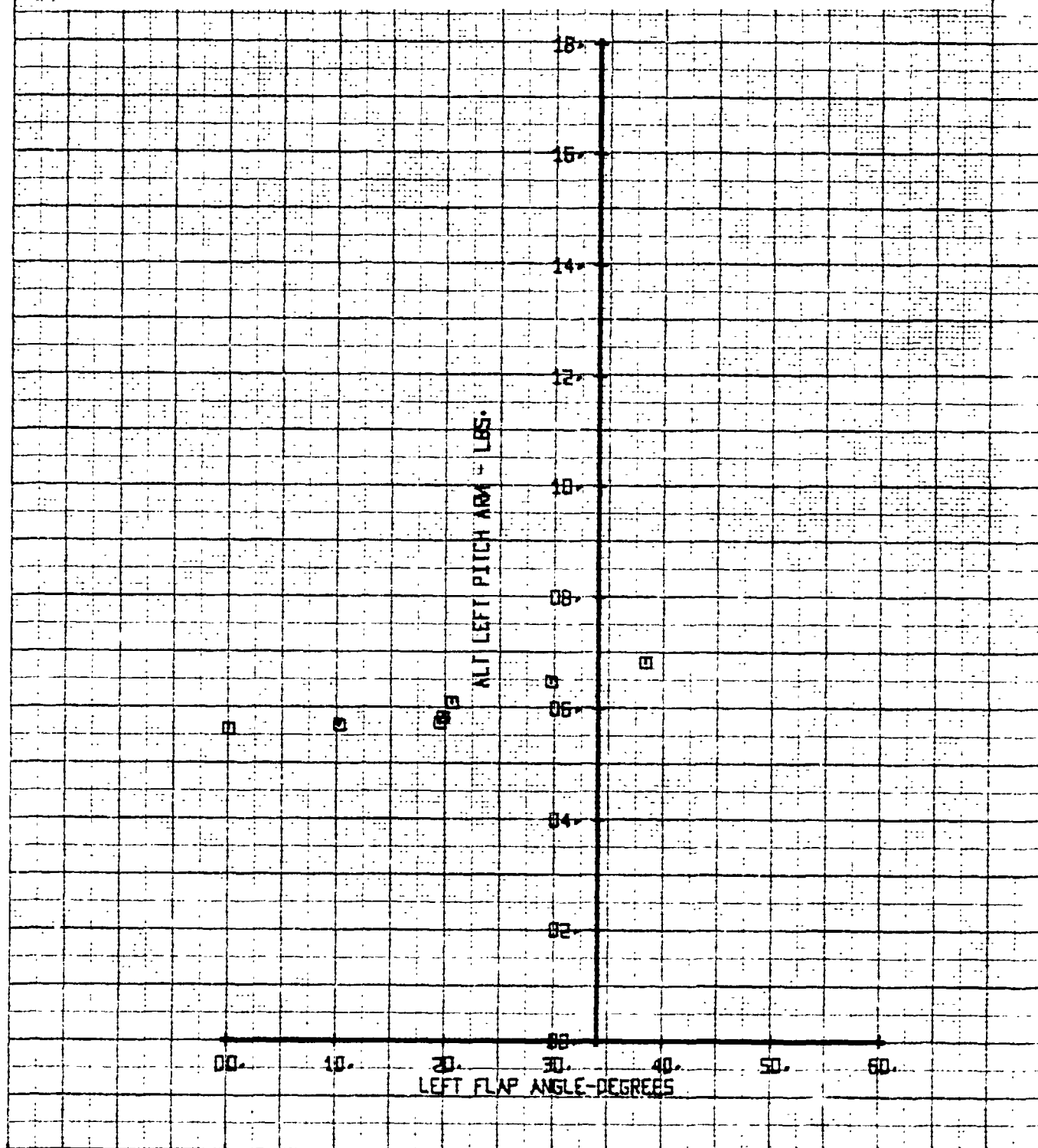
TILT ROTOR MODEL

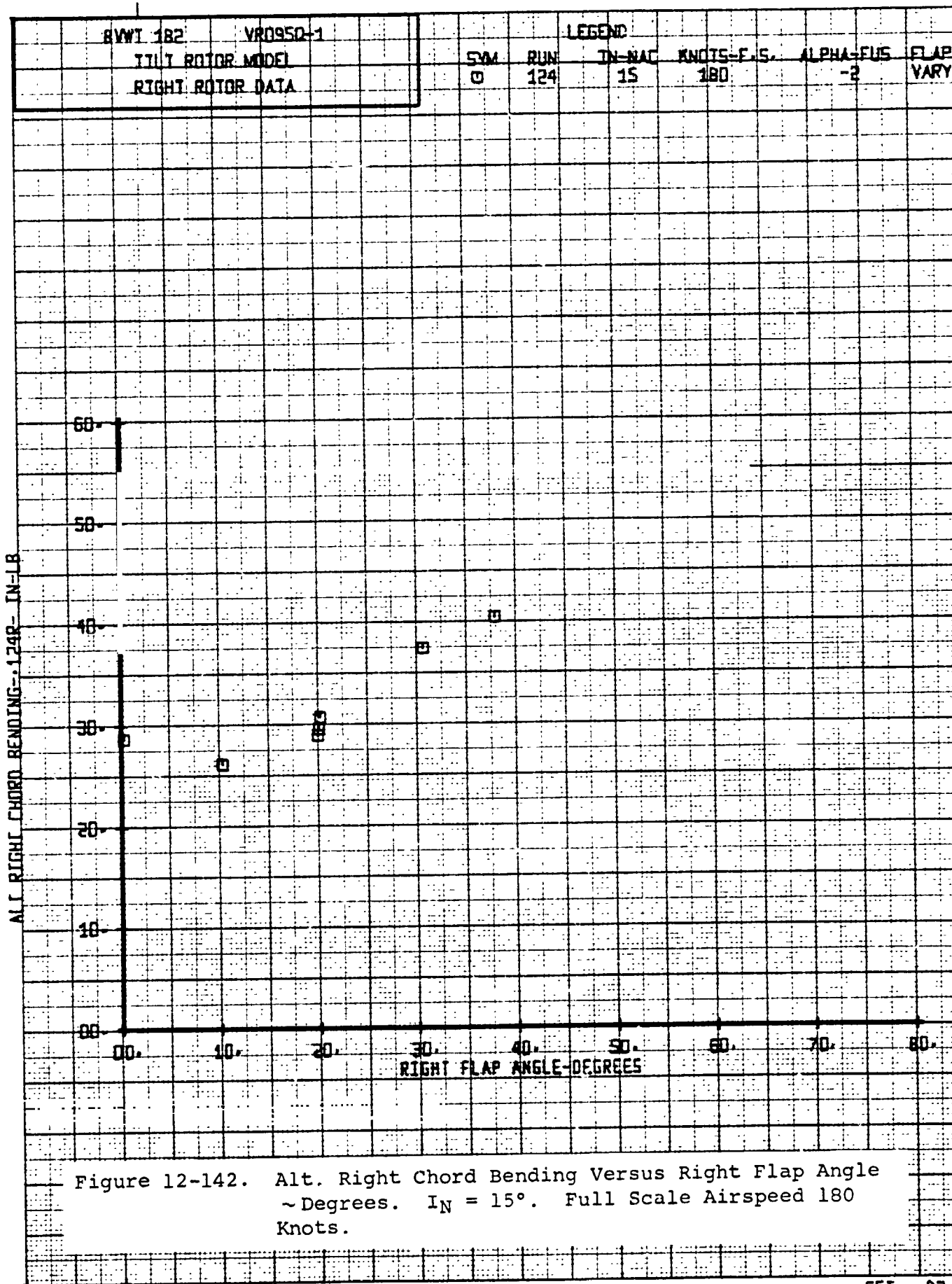
LEFT ROTOR DATA

LEGEND

| SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-ELUS | FLAP |
|-----|-----|--------|------------|------------|------|
| □ | 124 | 15 | 180 | -2 | V Y |

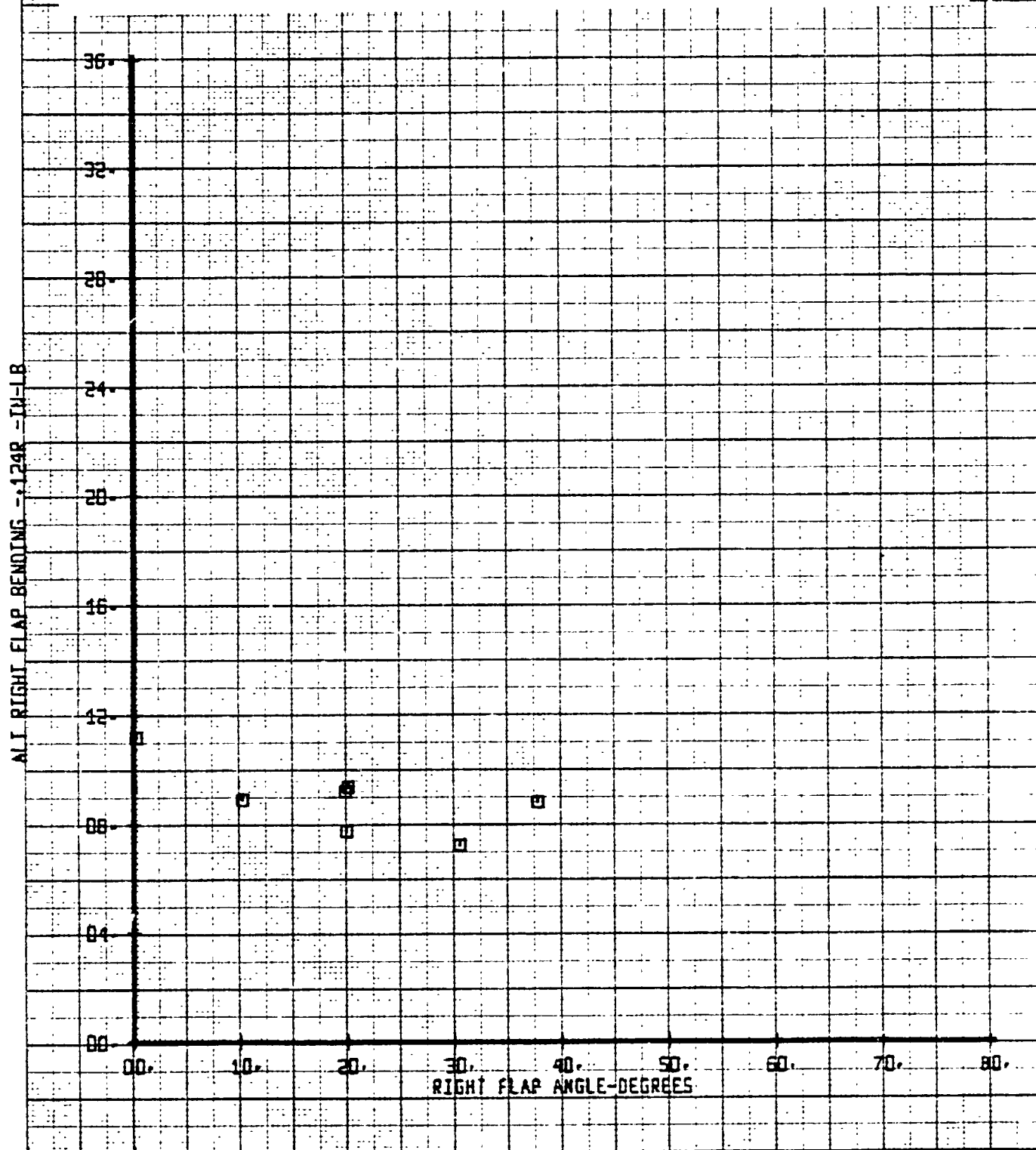
Figure 12-141. Alt. Left Pitch Link Load Versus Left Flap Angle~Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.





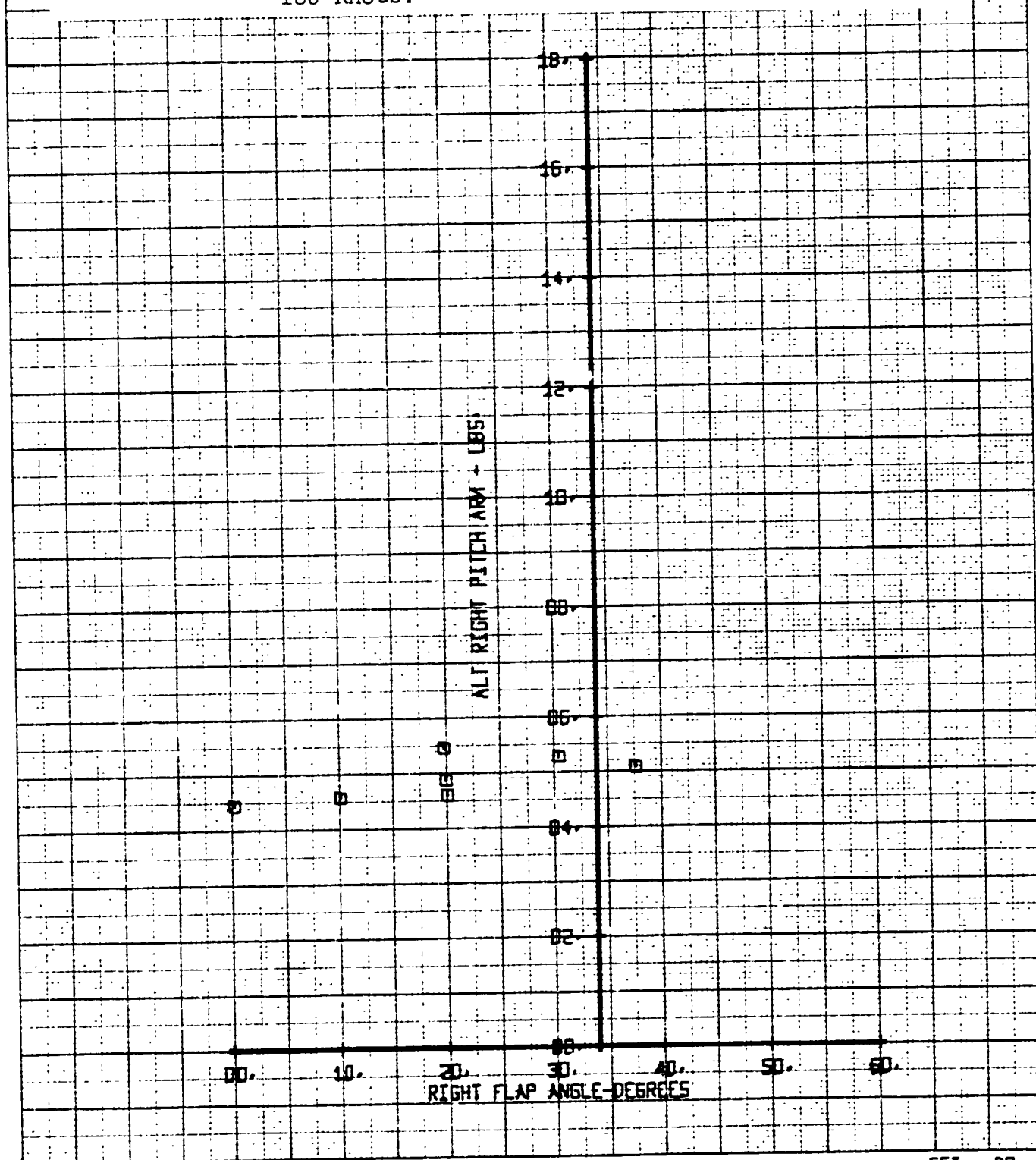
| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | VR0950-1 | LEGEND | | | | |
| YU1 ROTOR MODEL | | SYM | RUN | IN-WAC | KNOTS-F.S. | ALPHA-FUS |
| RIGHT ROTOR DATA | | Q | 124 | 15 | 180 | -2 |
| | | | | | | FLAP VARY |

Figure 12-143. Alt. Right Flap Bending Versus Right Flap Angle ~Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.



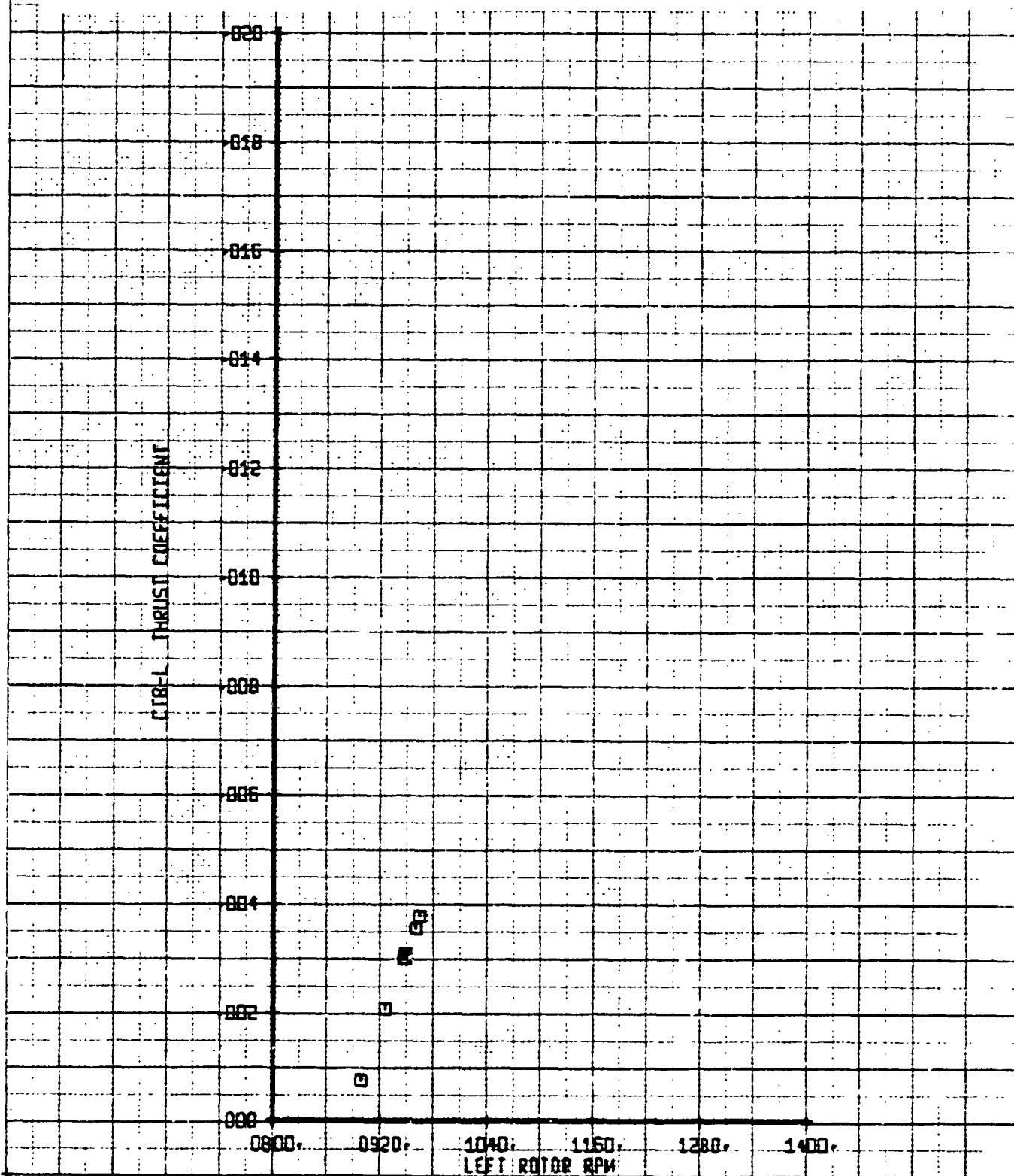
| | | | | | | | |
|------------------|------------------|--------|-----|--------|------------|-----------|------|
| BVWT 182 | YR0950-1 | LEGEND | | | | | |
| LEFT ROTOR MODEL | RIGHT ROTOR DATA | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FUS | FLAP |
| | | 0 | 124 | 15 | 180 | -2 | VARY |

Figure 12-144. Alt. Right Pitch Link Load Versus Right Flap Angle ~ Degrees. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.



| | | | | | | |
|-----------------|----------|--------|-----|--------|------------|-----------|
| BYWT 182 | VR0950-1 | LEGEND | | | | |
| LEFT ROTOR MODE | | SW | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FUS |
| LEFT ROTOR DATA | | 0 | 125 | 15 | 180 | -2 |
| | | | | | | F:AP |
| | | | | | | >0 |

Figure 12-145. Left Rotor Thrust Coefficient Versus Rotor RPM.
 $\alpha_N = 5^\circ$. Full Scale Airspeed 180 Knots.



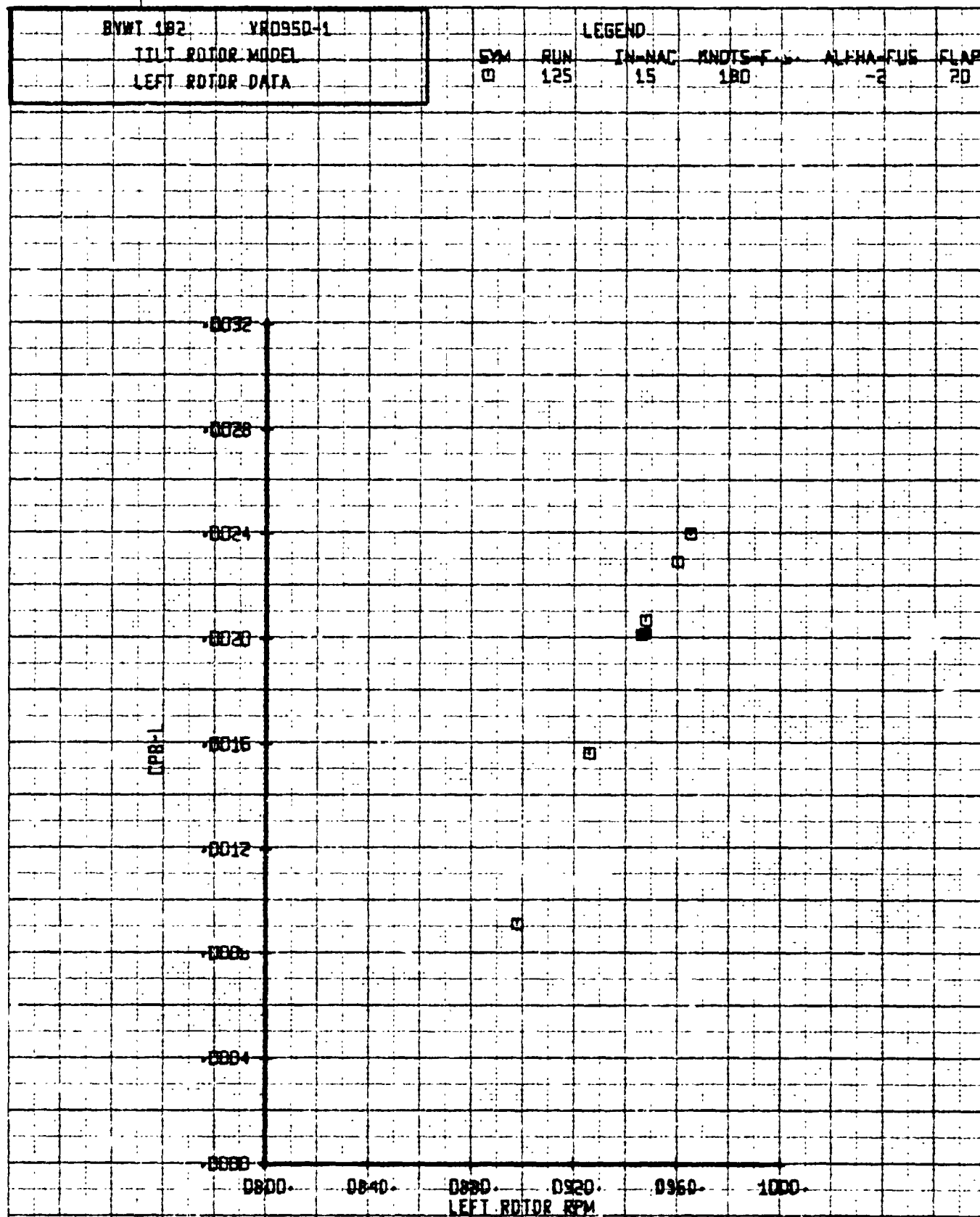


Figure 12-146. Left Rotor Power Coefficient Versus Rotor RPM.
 $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

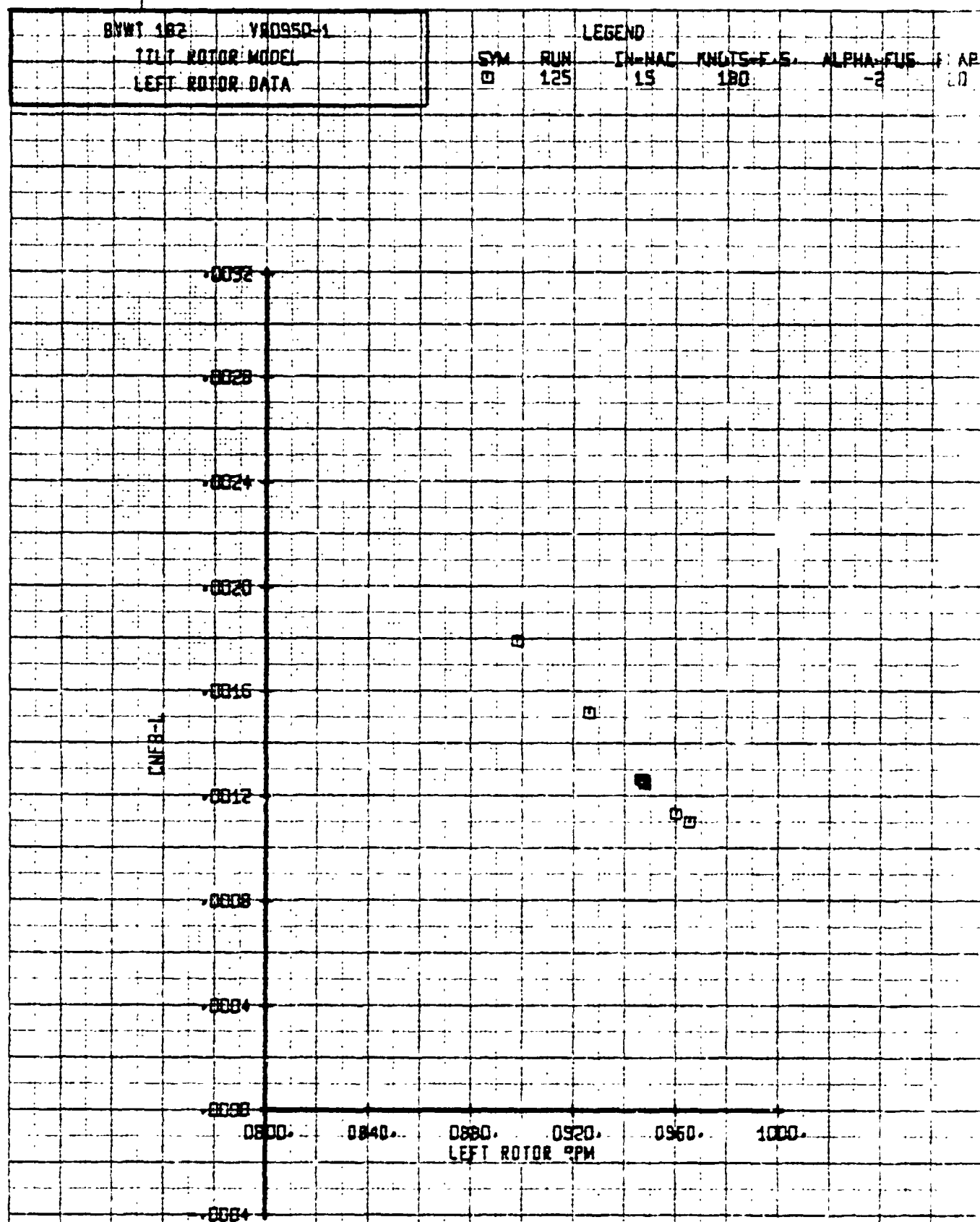
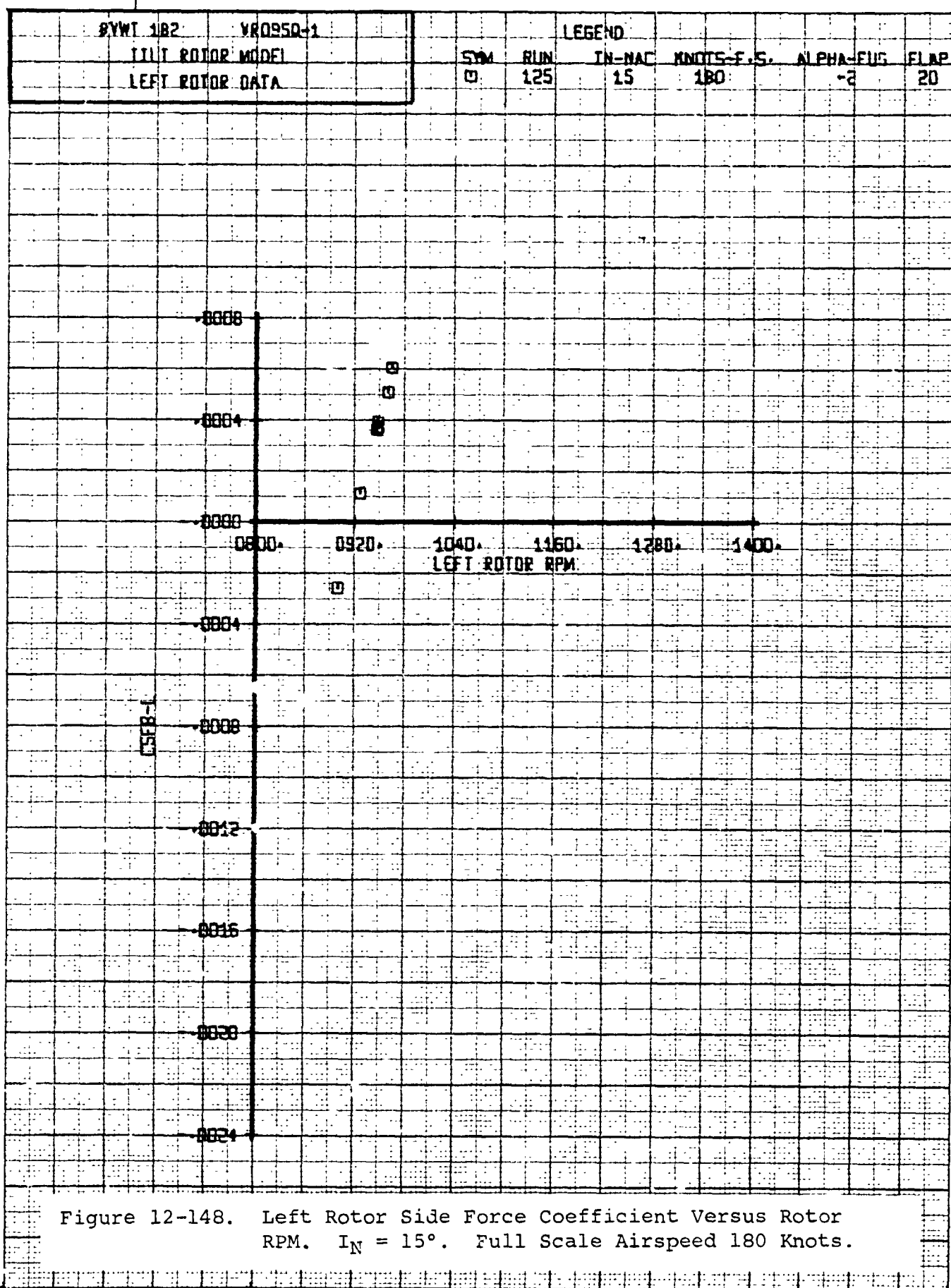


Figure 12-147. Left Rotor Normal Force Coefficient Versus Rotor RPM. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.



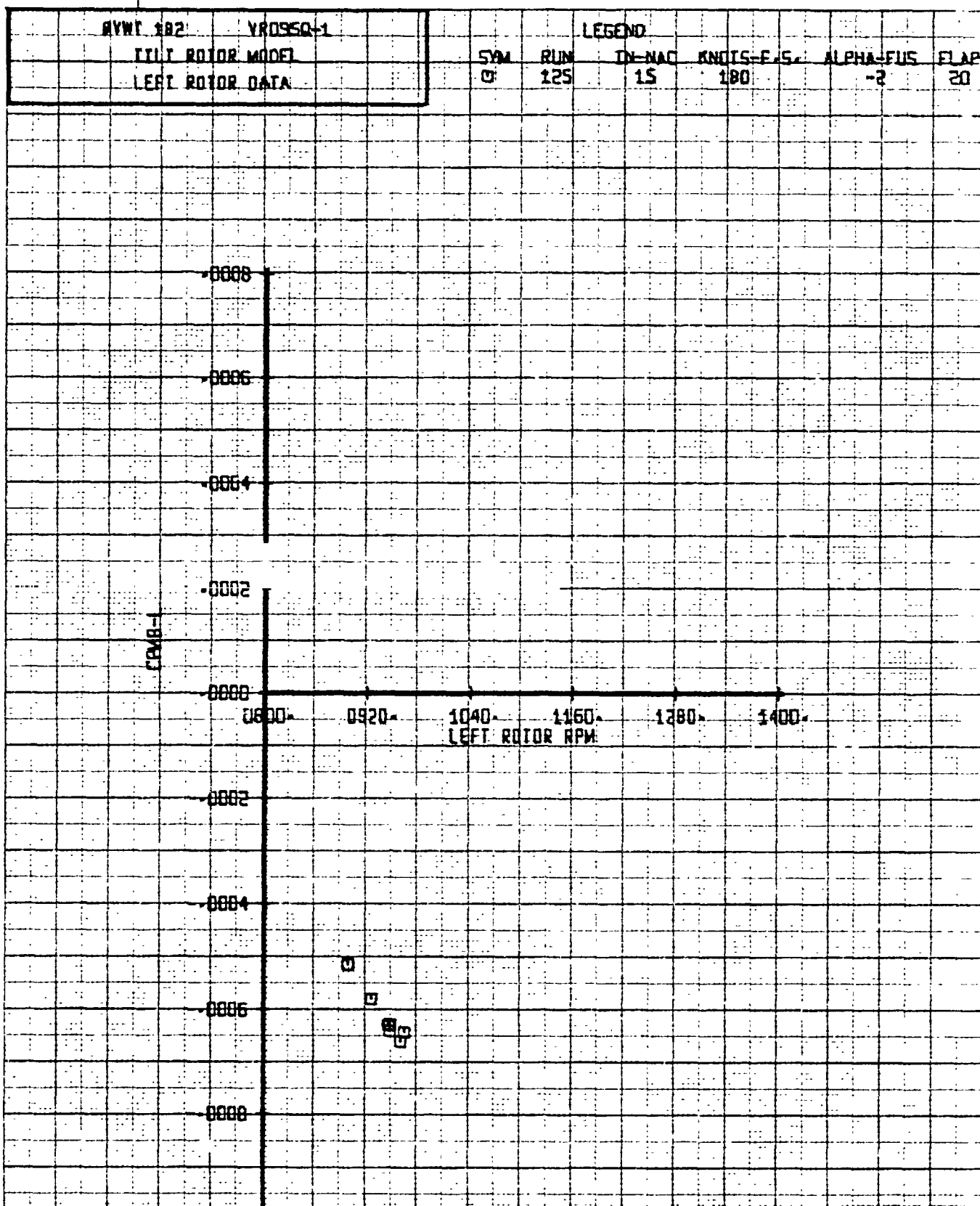
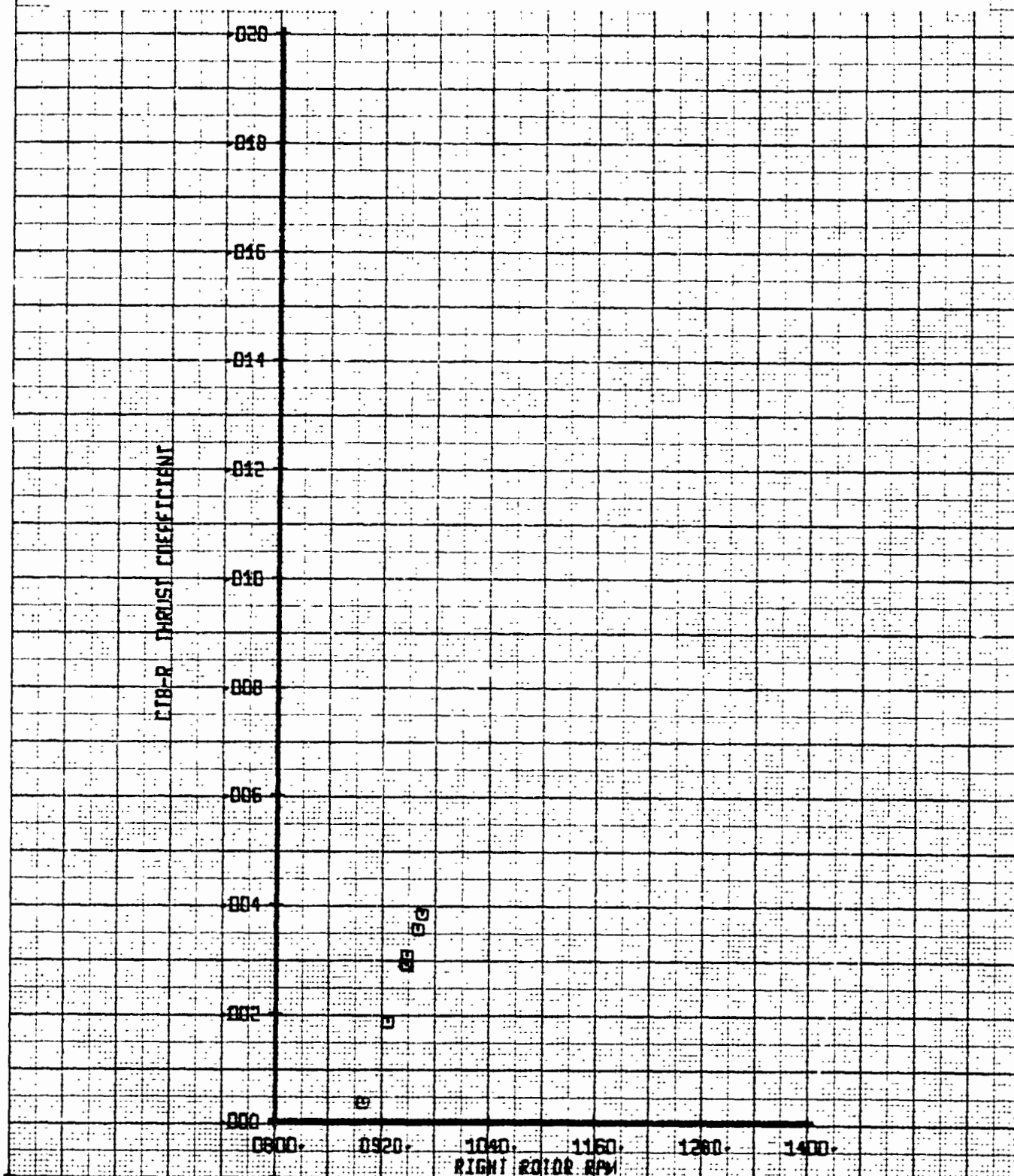


Figure 12-149. Left Rotor Pitching Moment Coefficient Versus Rotor RPM. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | VR0950-1 | LEGEND | | | | |
| TILT ROTOR MODEL | | SYM | RUN | IN-MAC | KNITS-F.S. | ALPHA-DEG |
| RIGHT ROTOR DATA | | □ | 125 | 15 | 180 | -2 |
| | | | | | | FLAP 20 |

Figure 12-151. Right Rotor Thrust Coefficient Versus Rotor RPM.
 $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.



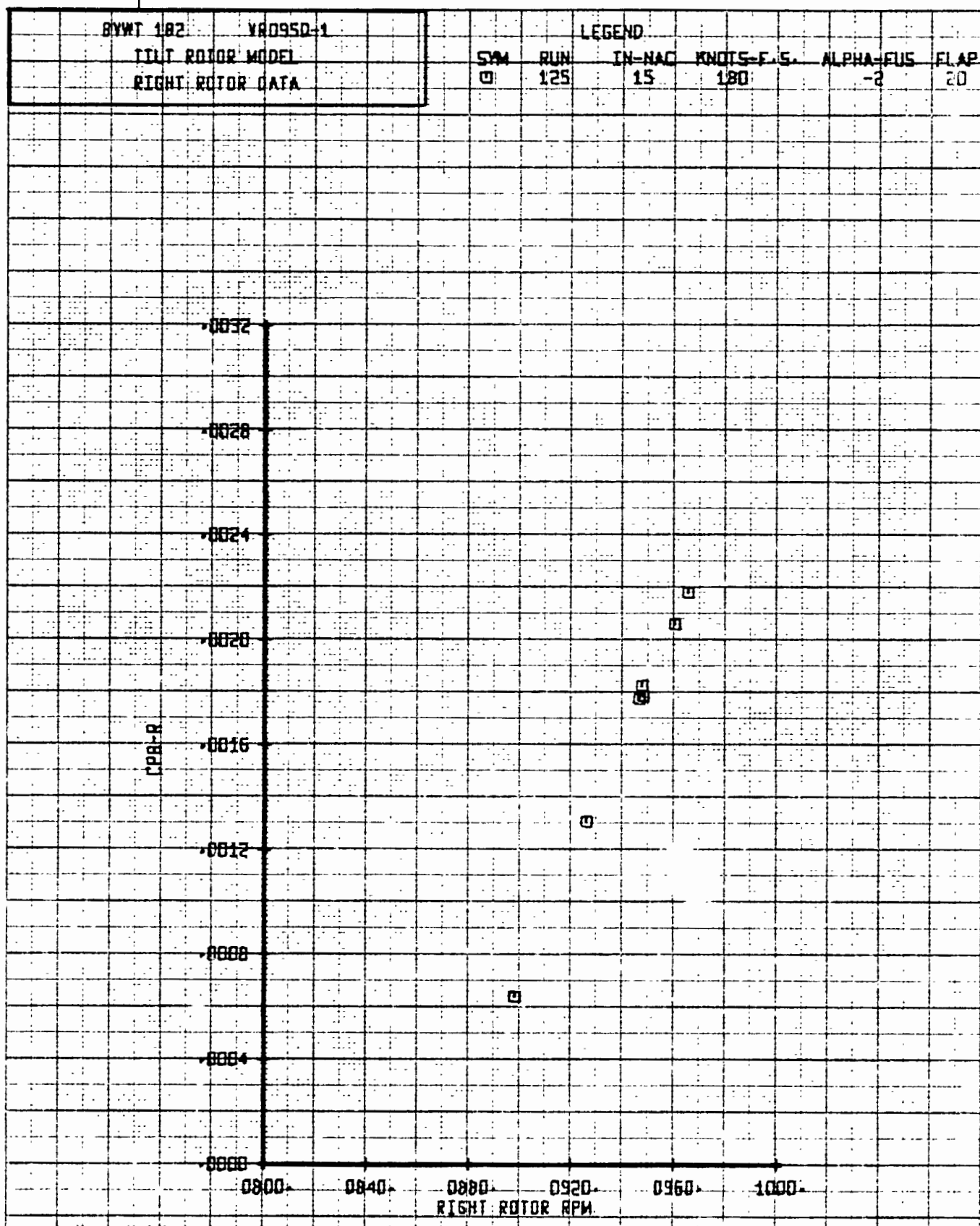


Figure 12-152. Right Rotor Power Coefficient Versus Rotor RPM.
 $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

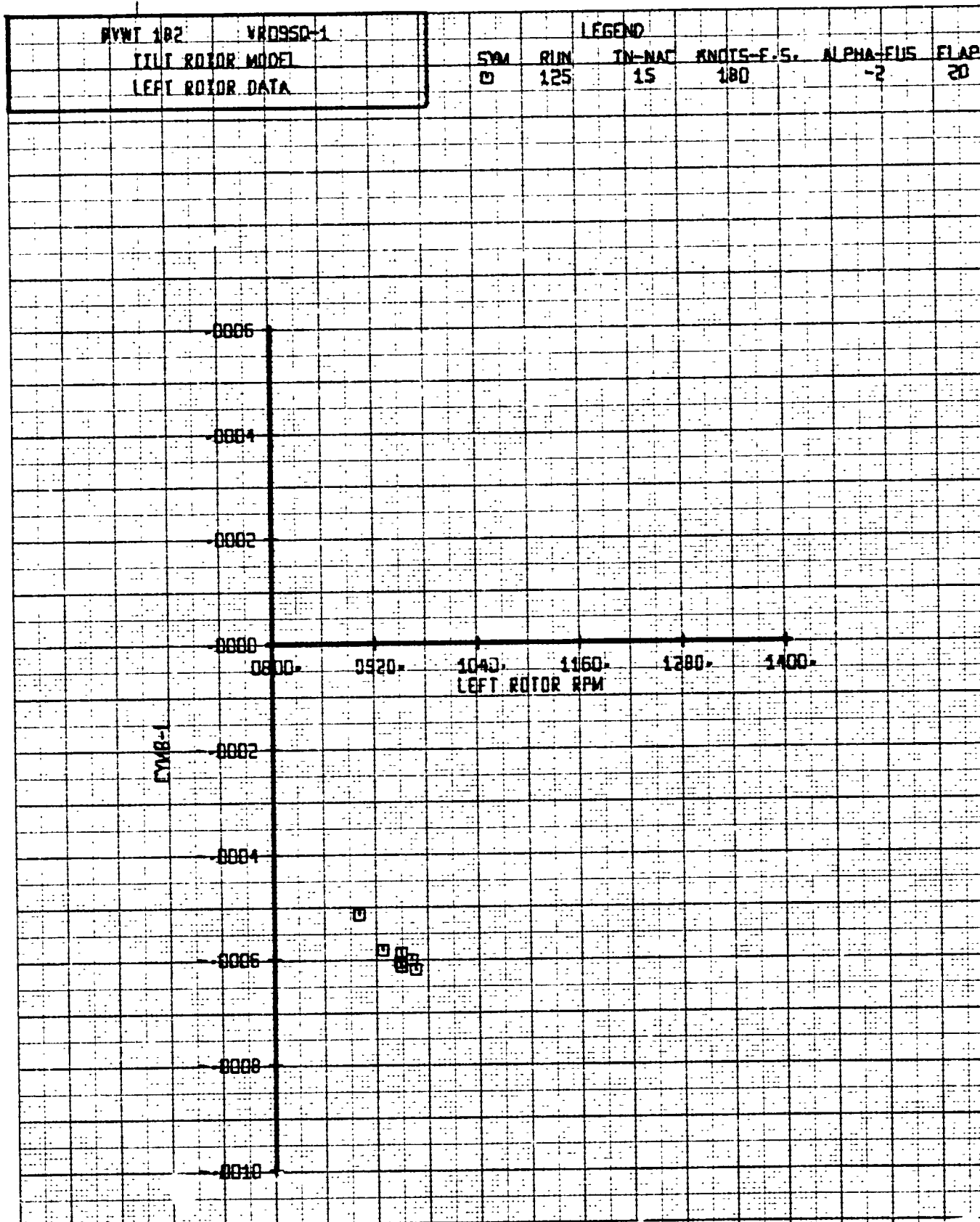


Figure 12-150. Left Rotor Yawing Moment Coefficient Versus Rotor RPM. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

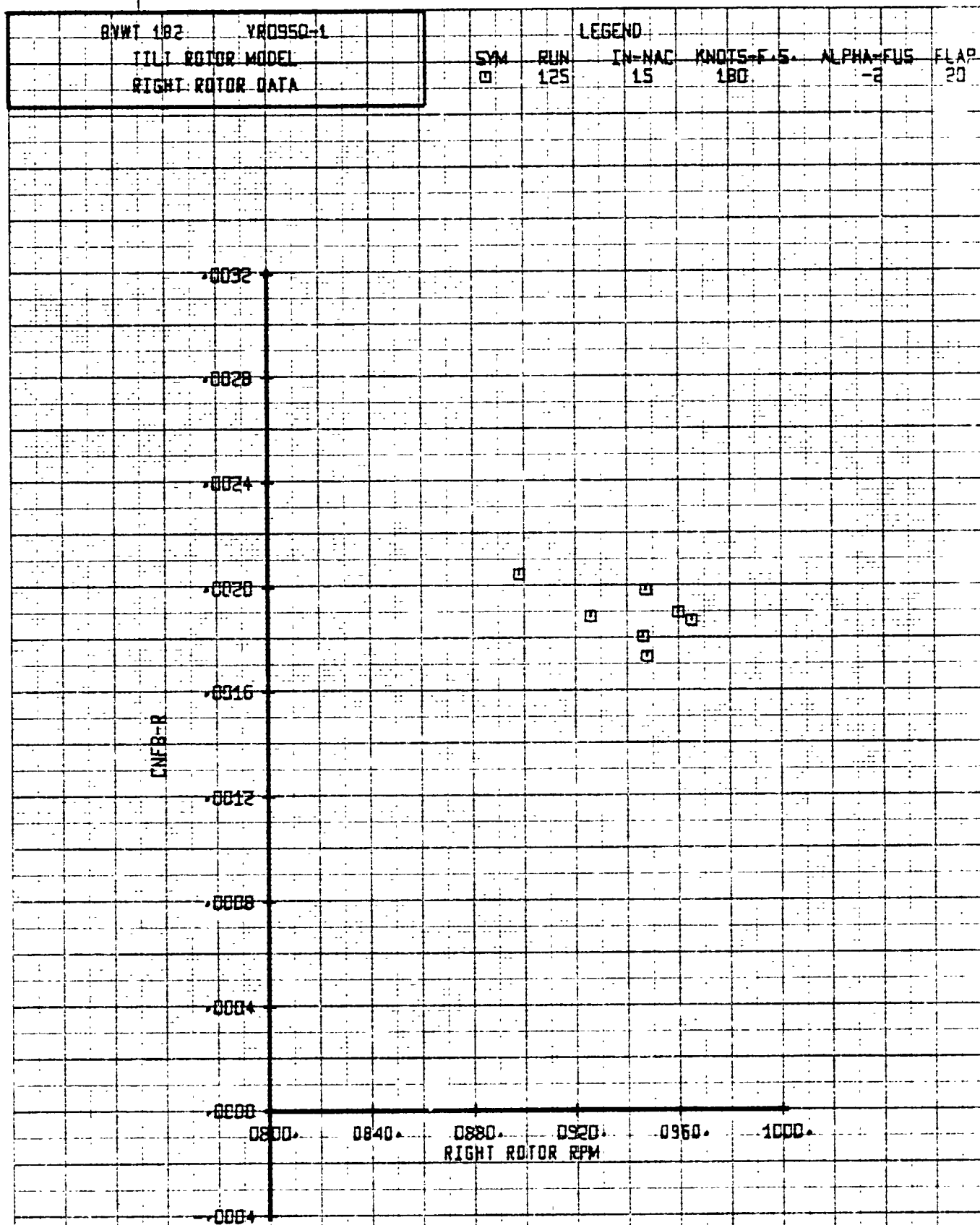


Figure 12-153. Right Rotor Normal Force Coefficient Versus Rotor RPM. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

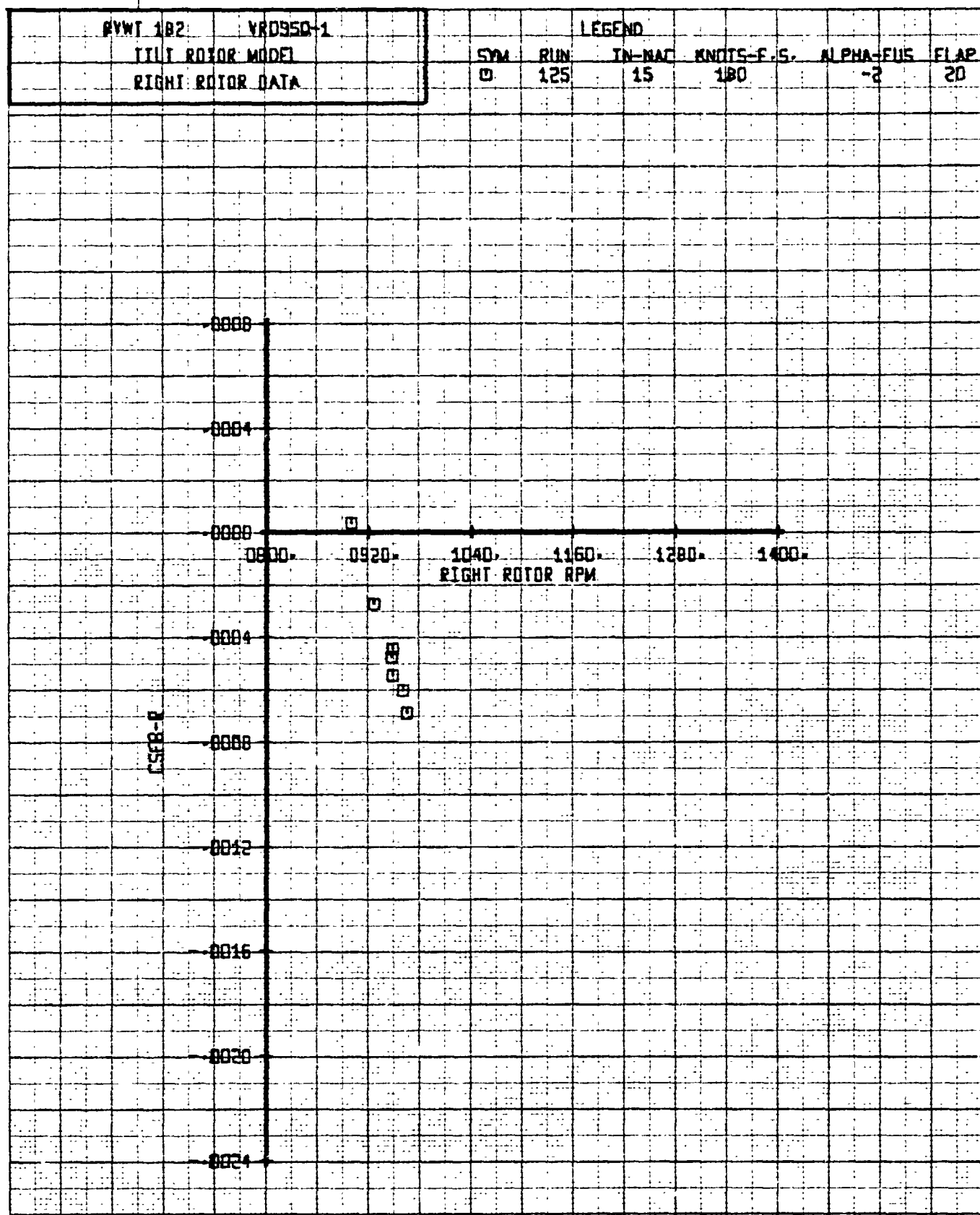


Figure 12-154. Right Rotor Side Force Coefficient Versus Rotor RPM. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

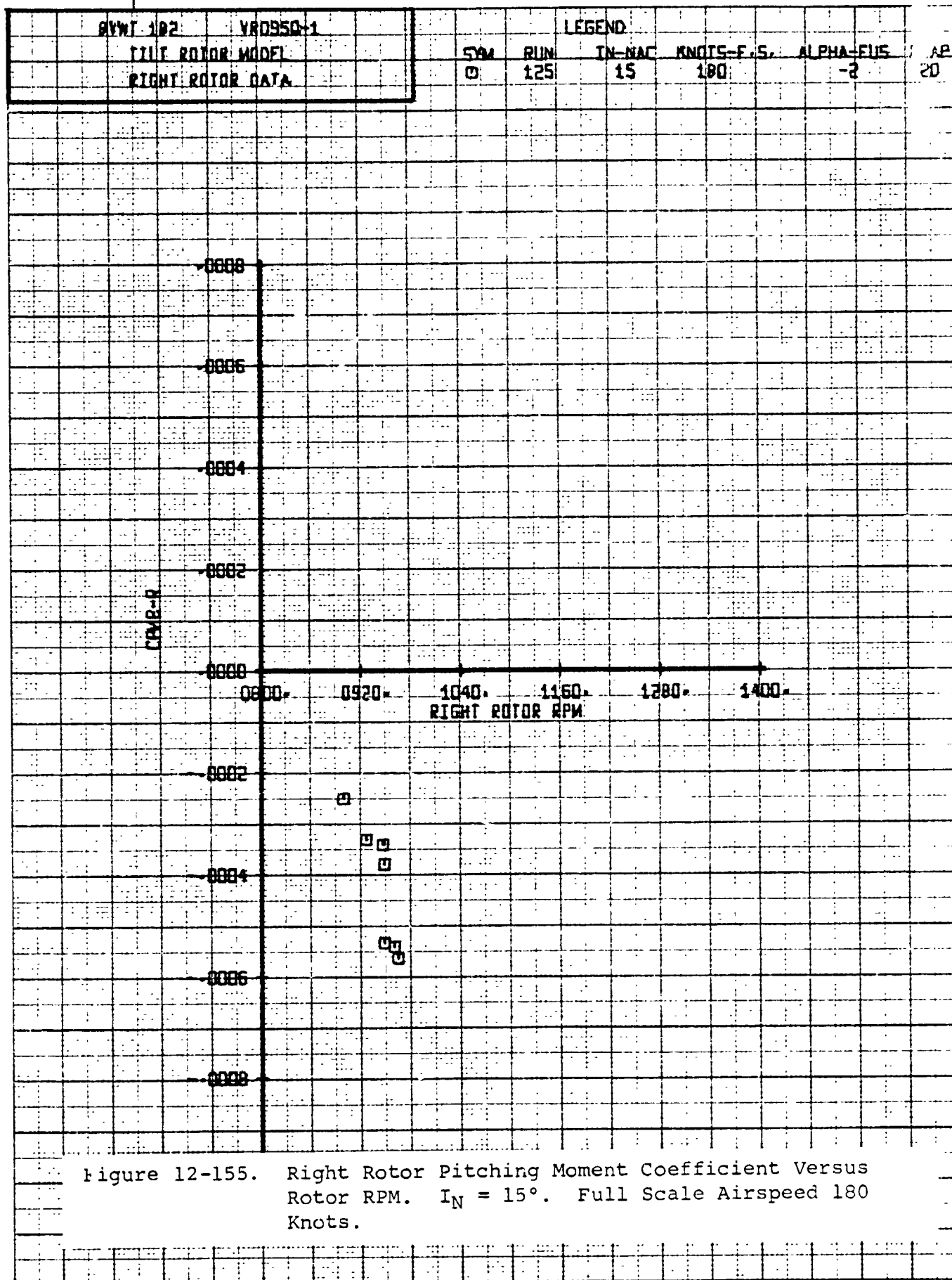


Figure 12-155. Right Rotor Pitching Moment Coefficient Versus Rotor RPM. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

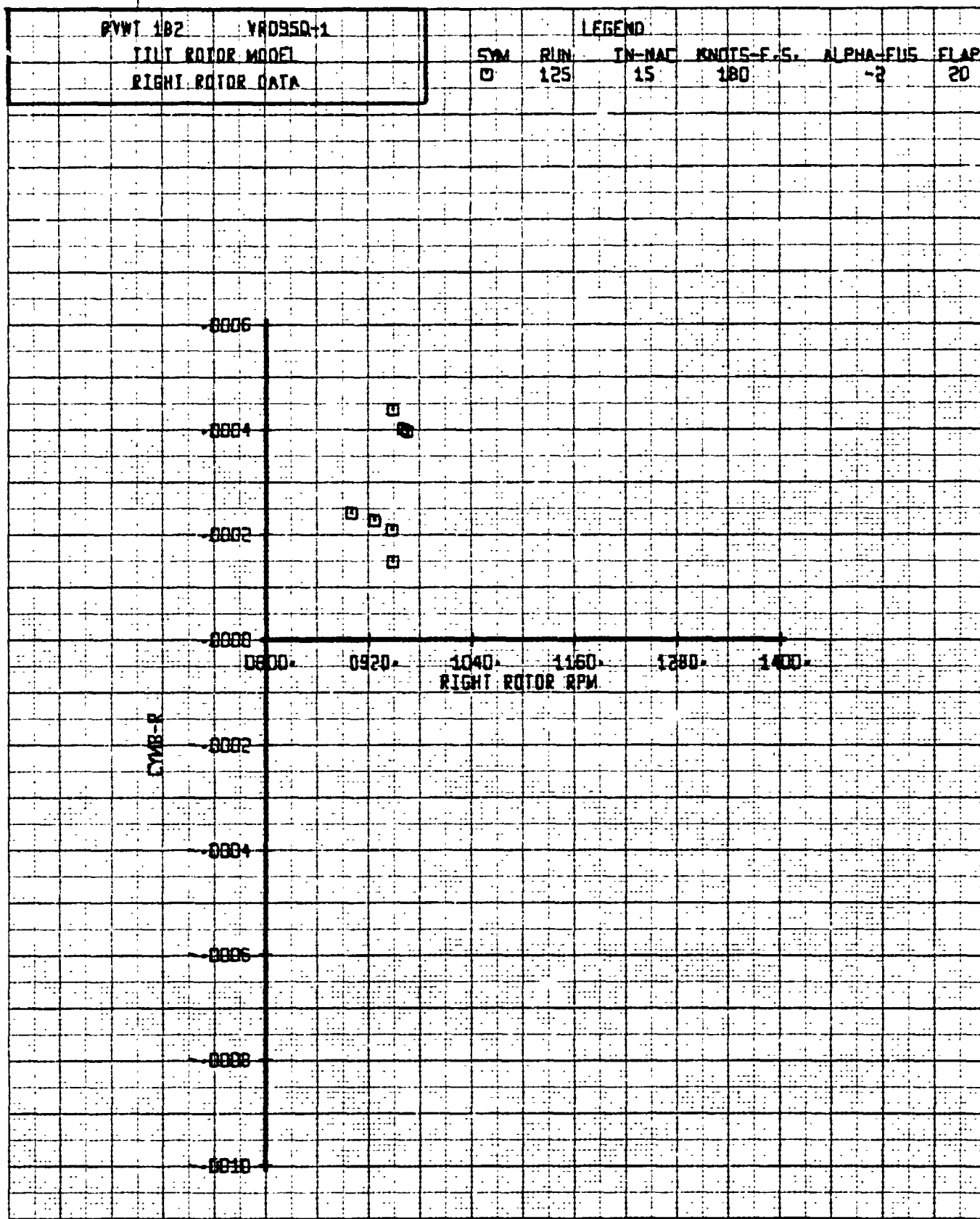
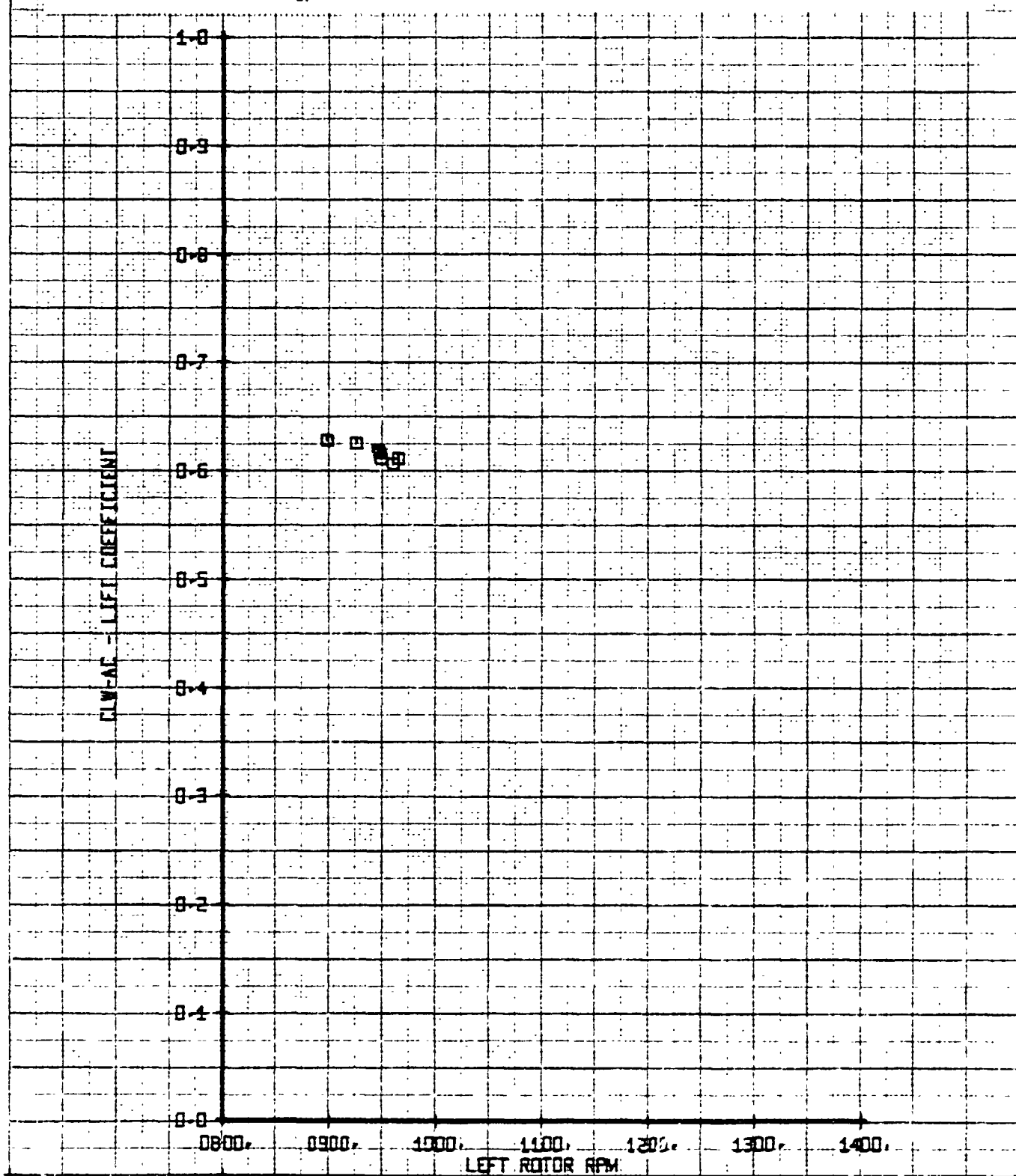
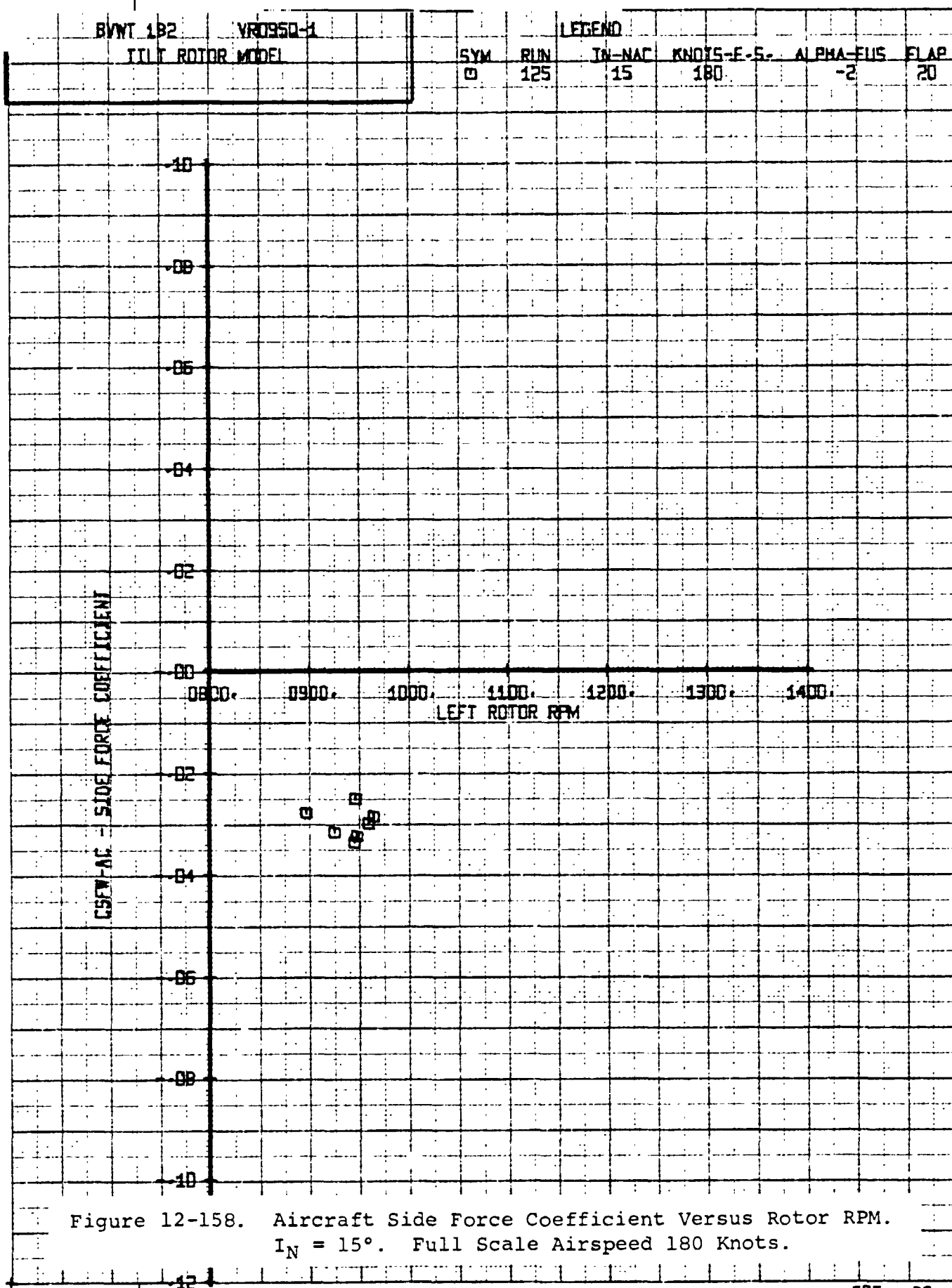


Figure 12-156. Right Rotor Yawing Moment Coefficient Versus Rotor RPM. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | VR0950-1 | LEGEND | | | | |
| TILT ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-F.F. | ALPHA-FUS |
| | | □ | 125 | 15 | 180 | -2 |
| | | | | | | FLAP 0 |

Figure 12-157. Aircraft Lift Coefficient Versus Rotor RPM.
 $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.





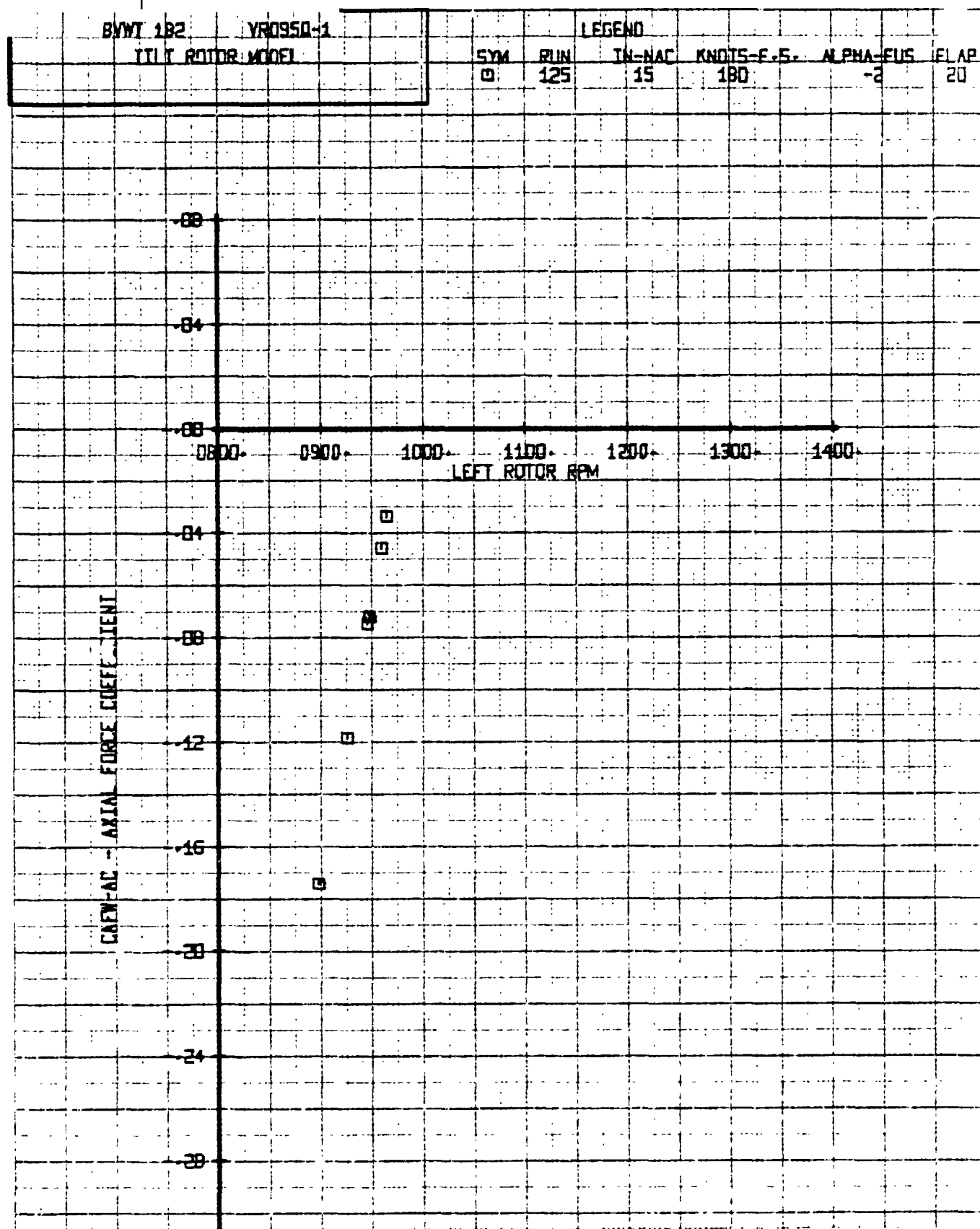


Figure 12-159. Aircraft Axial Force Coefficient Versus Rotor RPM.
IN = 15°. Full Scale Airspeed 180 Knots.

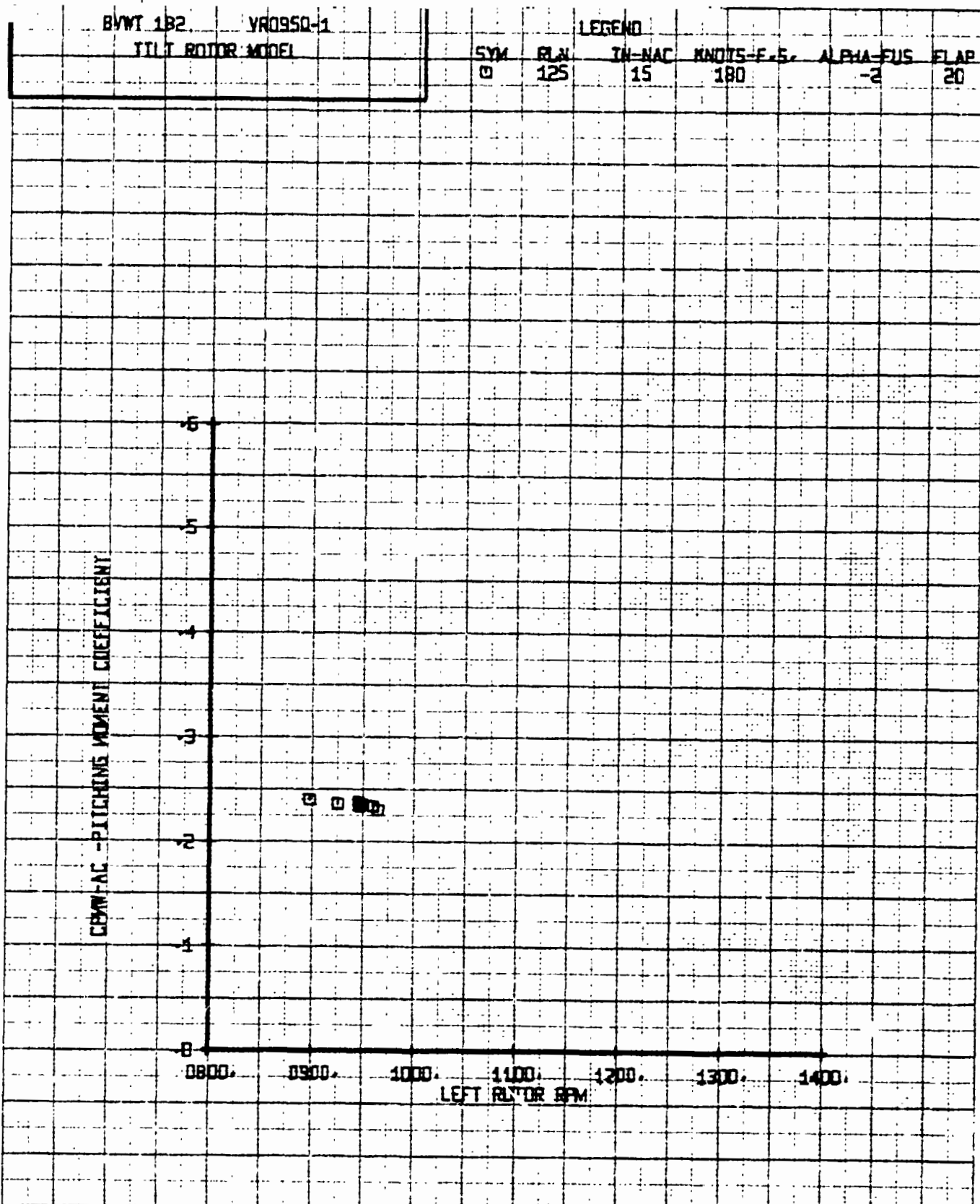


Figure 12-160. Aircraft Pitching Moment Coefficient Versus Rotor RPM. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

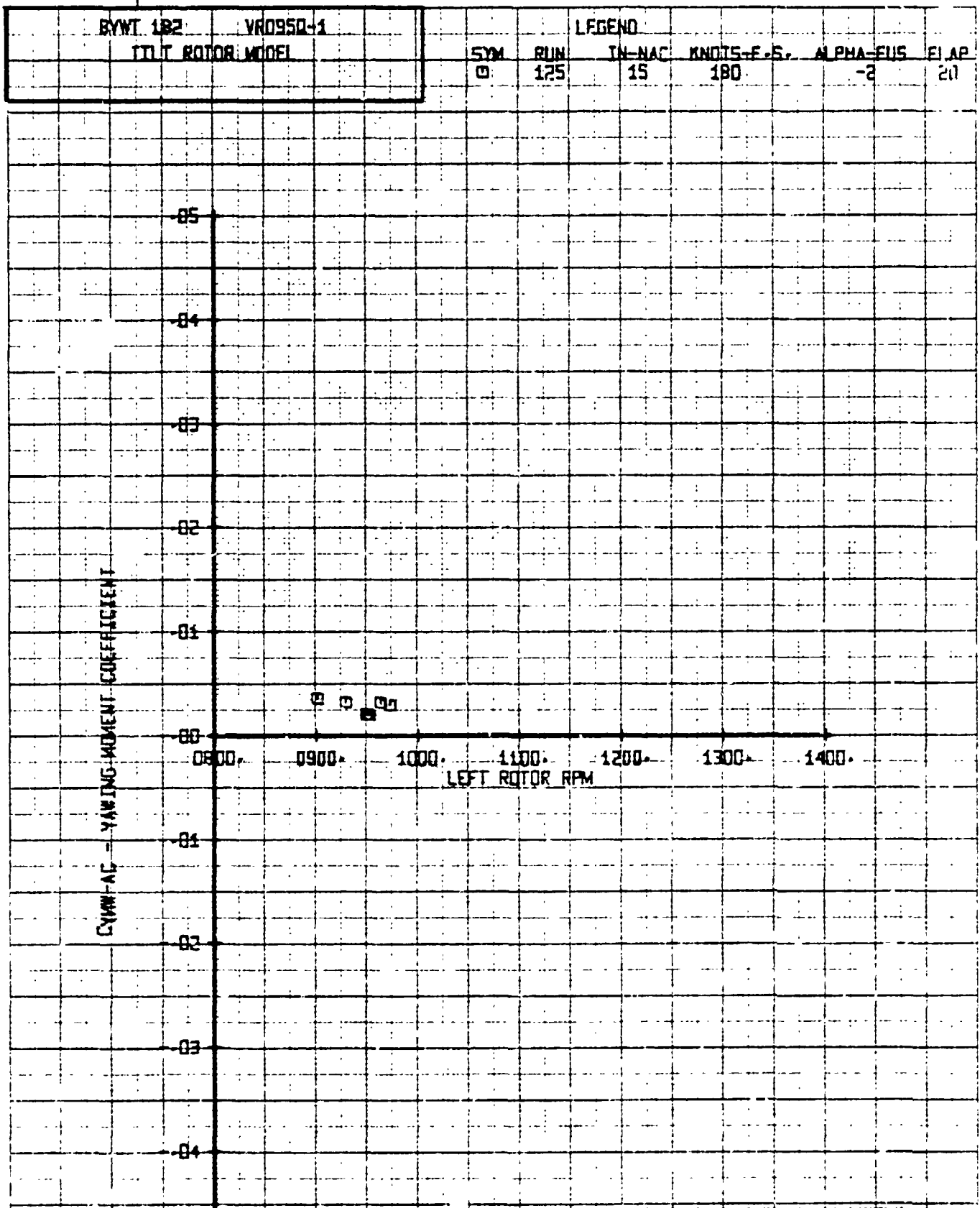
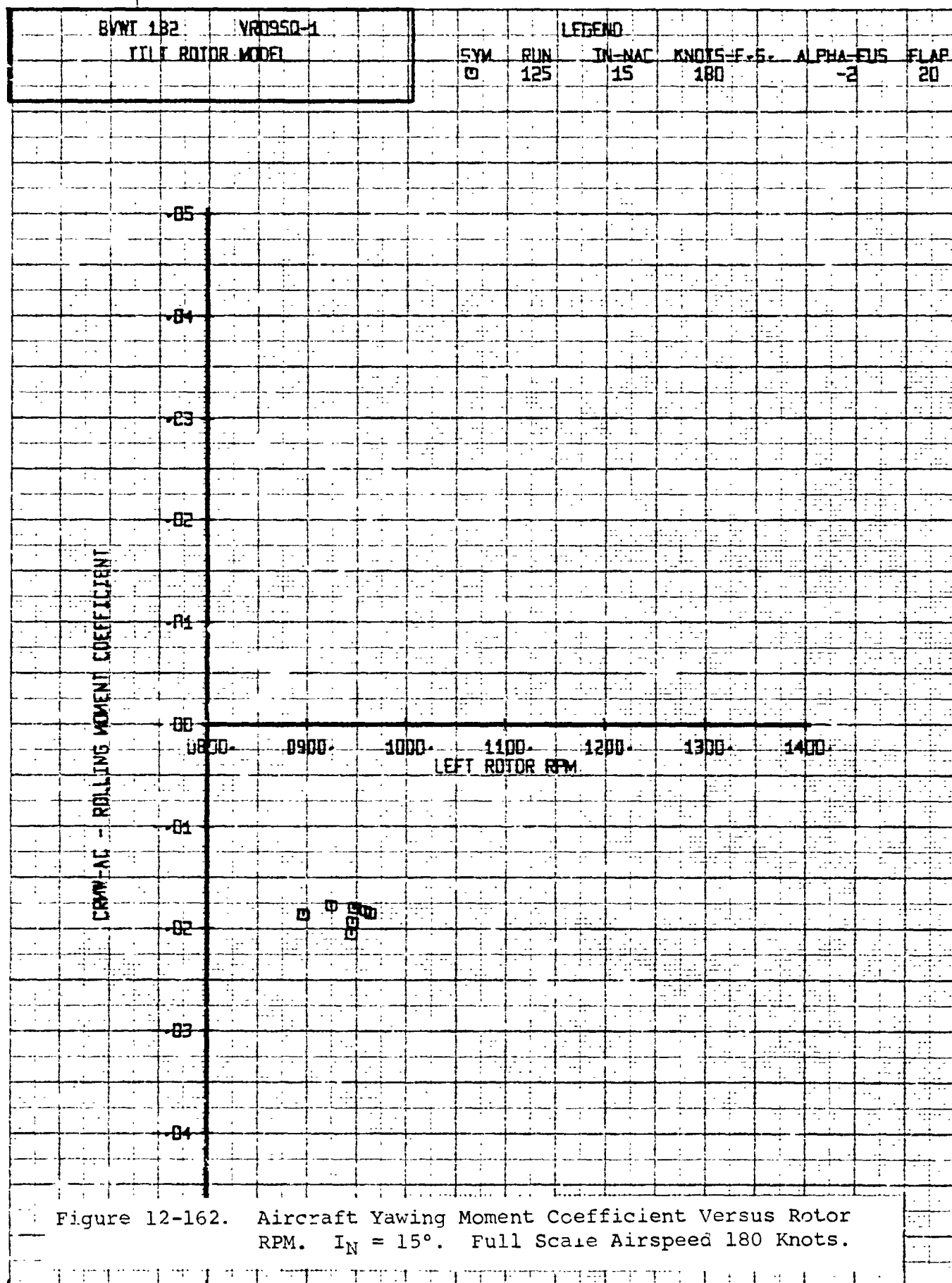


Figure 12-161. Aircraft Rolling Moment Coefficient Versus Rotor RPM. $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.



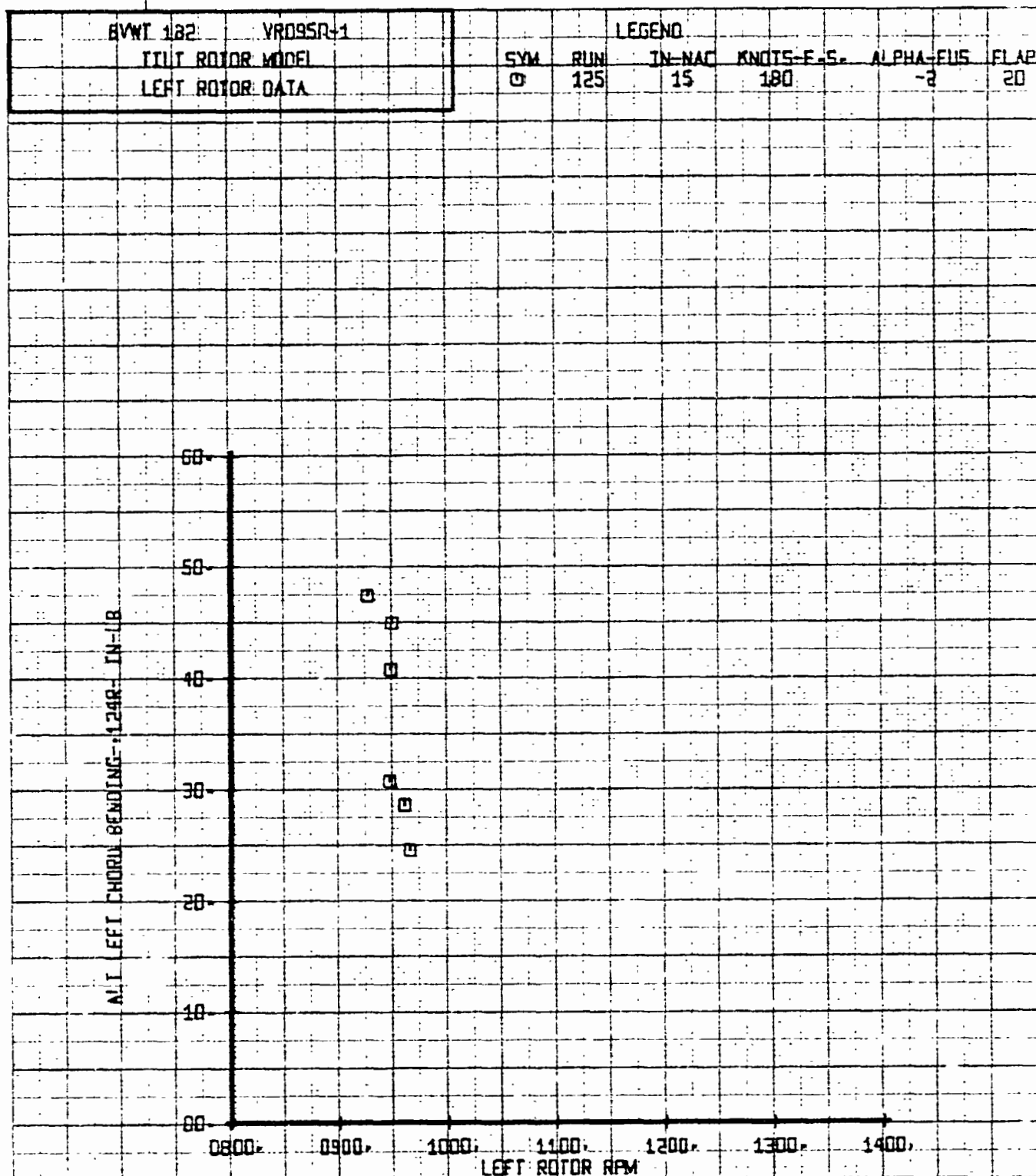
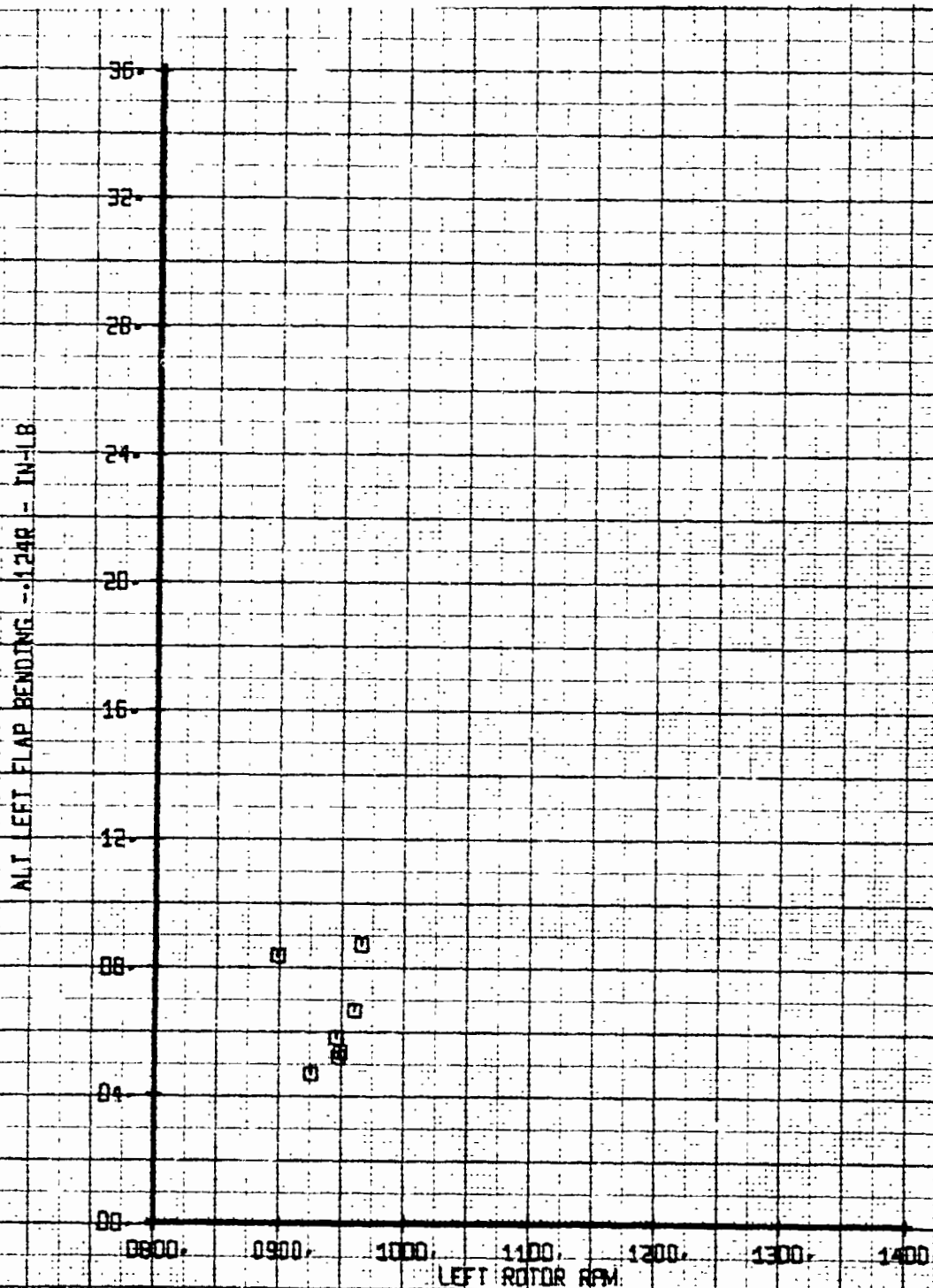


Figure 12-163. Alt. Left Chord Bending Versus Rotor RPM.
 $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

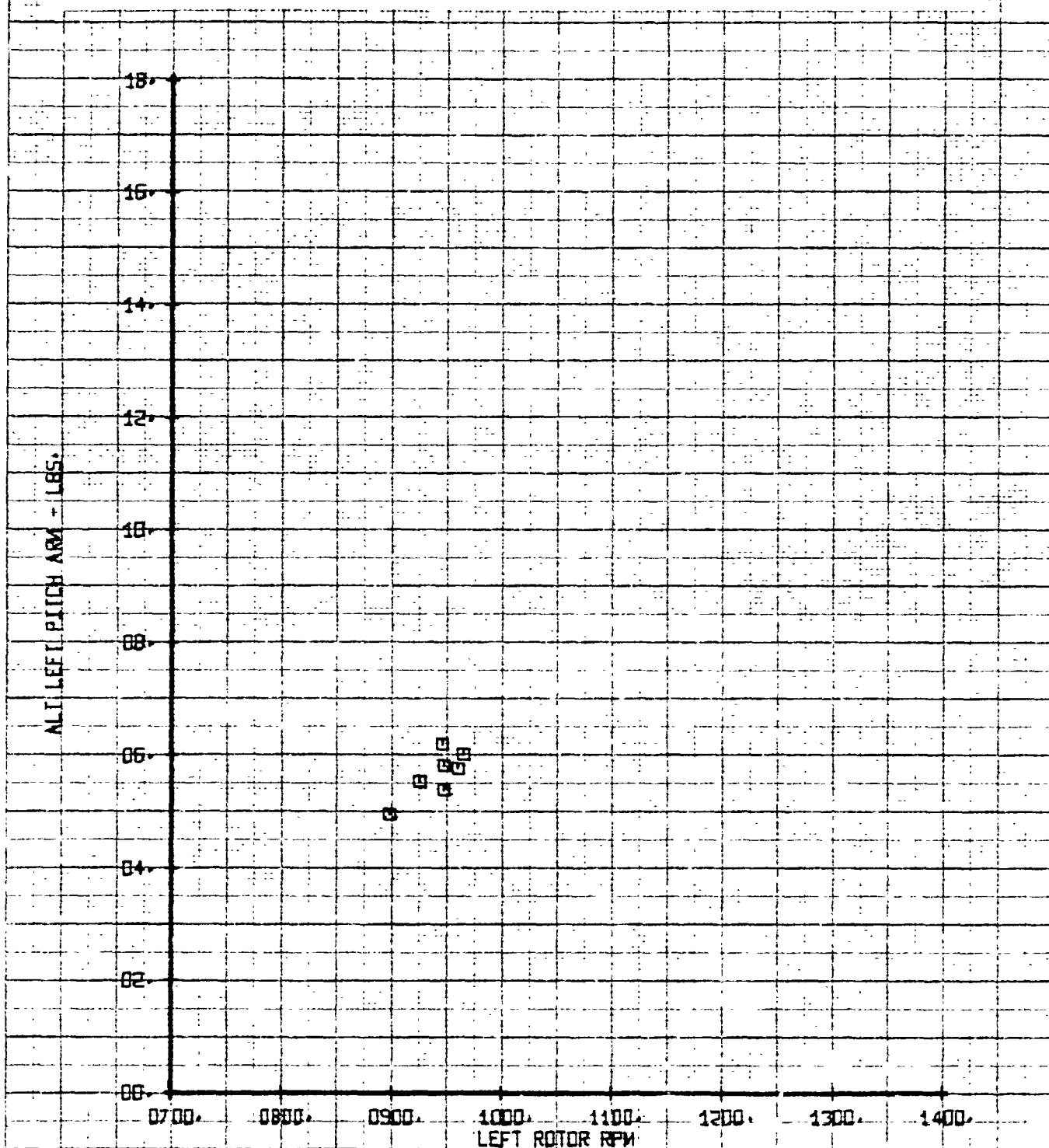
| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | VR0950-1 | LEGEND | | | | |
| LEFT ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FUS |
| LEFT ROTOR DATA | | □ | 125 | 15 | 180 | -2 |
| | | | | | | FLAP 20 |

Figure 12-164. Alt. Left Flap Bending Versus Rotor RPM.
 $\alpha_N = 15^\circ$. Full Scale Airspeed 180 Knots.



| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | YR0950-1 | LEGEND | | | | |
| TILT ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-FUS |
| LEFT ROTOR DATA | | 0 | 125 | 15 | 180 | -2 |
| | | | | | | 20 |

Figure 12-165. Alt. Left Pitch Link Load Versus Rotor RPM.
 $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.



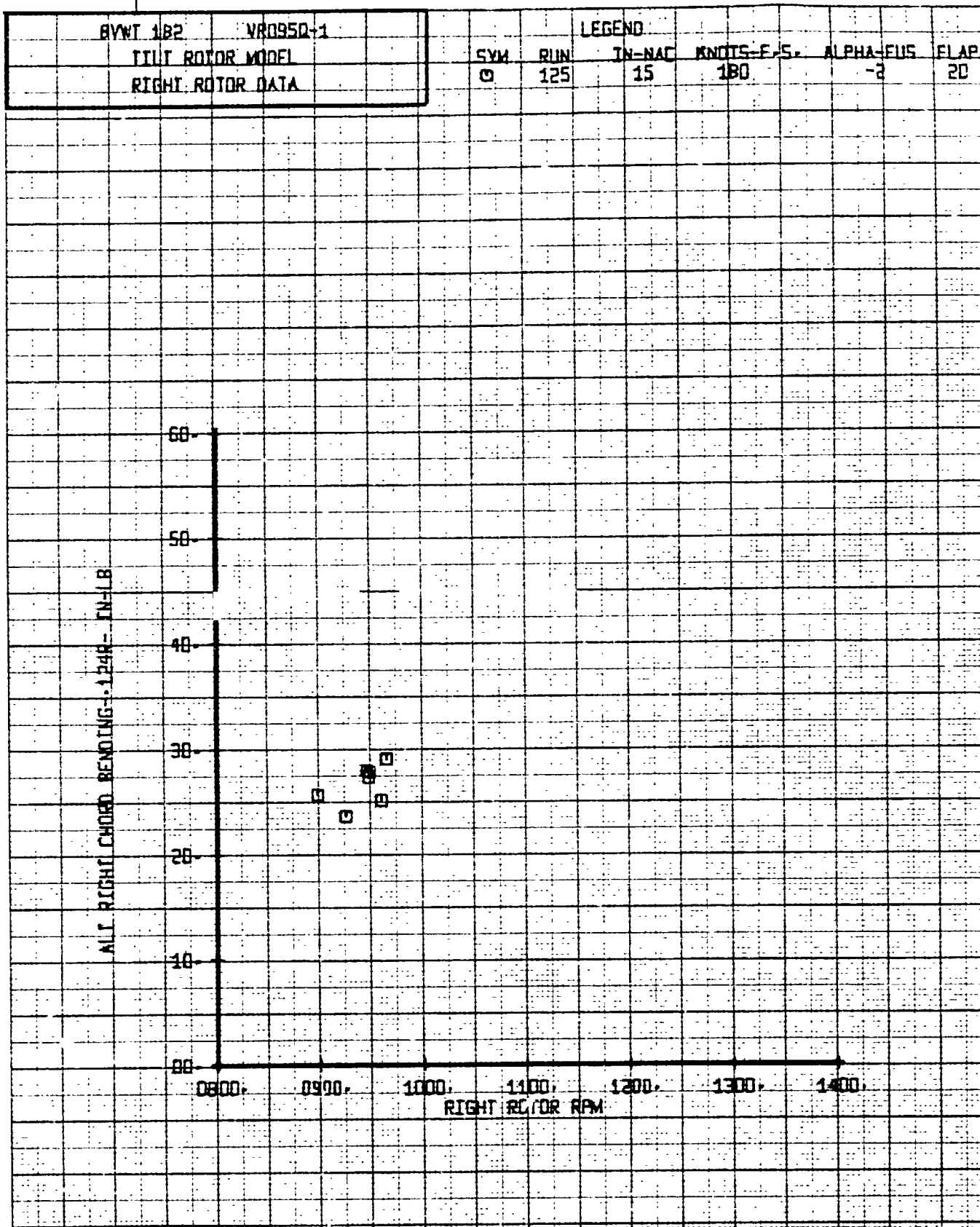
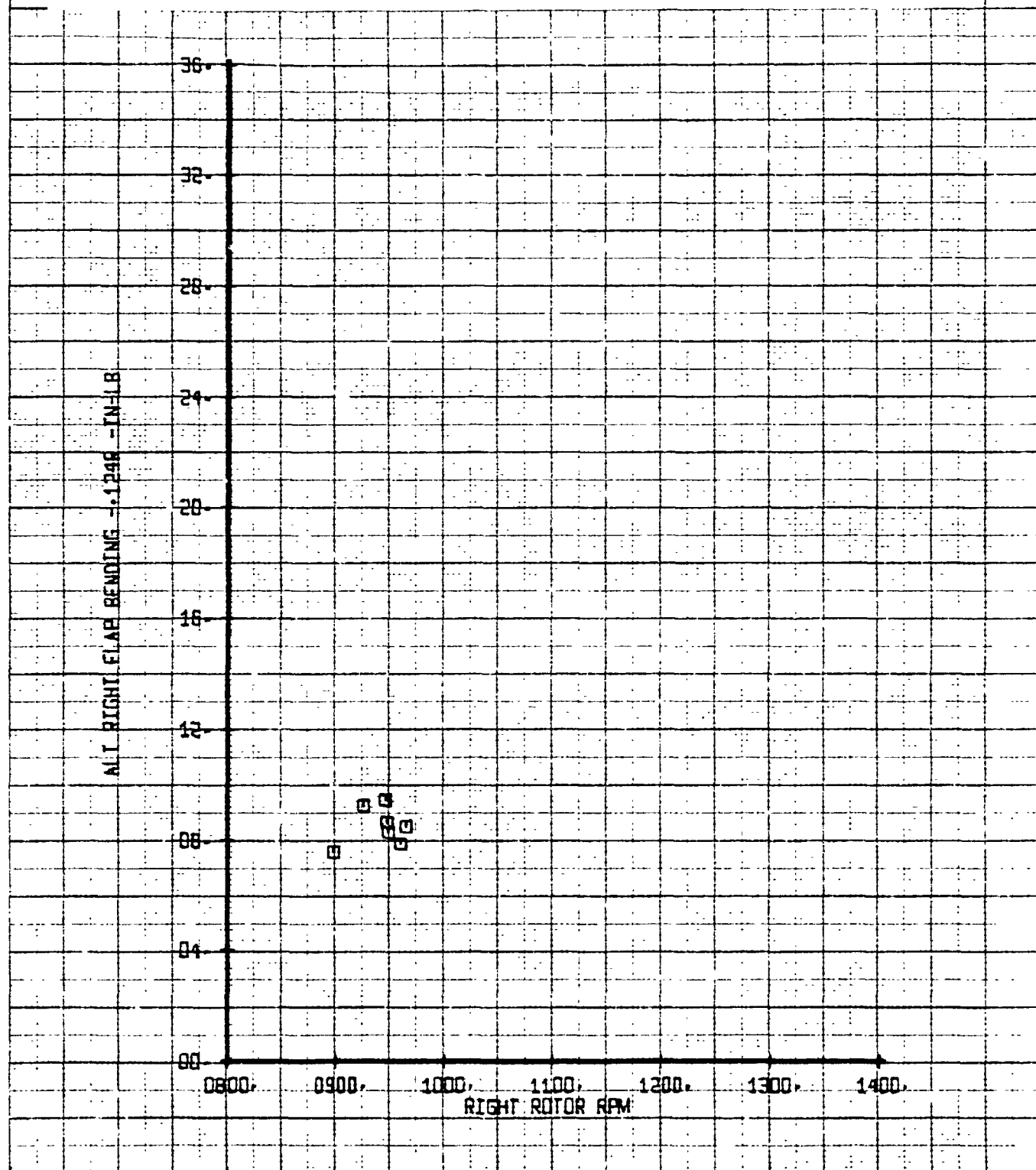


Figure 12-166. Alt. Right Chord Bending Versus Rotor RPM.
 IN = 15°. Full Scale Airspeed 180 Knots.

| | | | | | | | |
|------------------|--|------------------|--|--------|-----|--------|------------|
| BVWT 182 | | VROSSQ-1 | | LEGEND | | | |
| LEFT ROTOR MODEL | | RIGHT ROTOR DATA | | SYM | RUN | IN-NAC | KNOTS-F.S. |
| | | | | □ | 125 | 15 | 180 |
| | | | | | | | ALPHA-FUS |
| | | | | | | | -2 |
| | | | | | | | FLAP |
| | | | | | | | 20 |

Figure 12-167. Alt. Right Flap Bending Versus Rotor RPM.
 $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.



| | | | | | | |
|------------------|----------|--------|-----|--------|------------|-----------|
| BVWT 182 | YR0950-1 | LEGEND | | | | |
| TILT ROTOR MODEL | | SYM | RUN | IN-NAC | KNOTS-F.S. | ALPHA-DEG |
| RIGHT ROTOR DATA | | 0 | 125 | 15 | 180 | -2 |
| | | | | | | 20 |

Figure 12-168. Alt. Right Pitch Link Load Versus Rotor RPM.
 $I_N = 15^\circ$. Full Scale Airspeed 180 Knots.

